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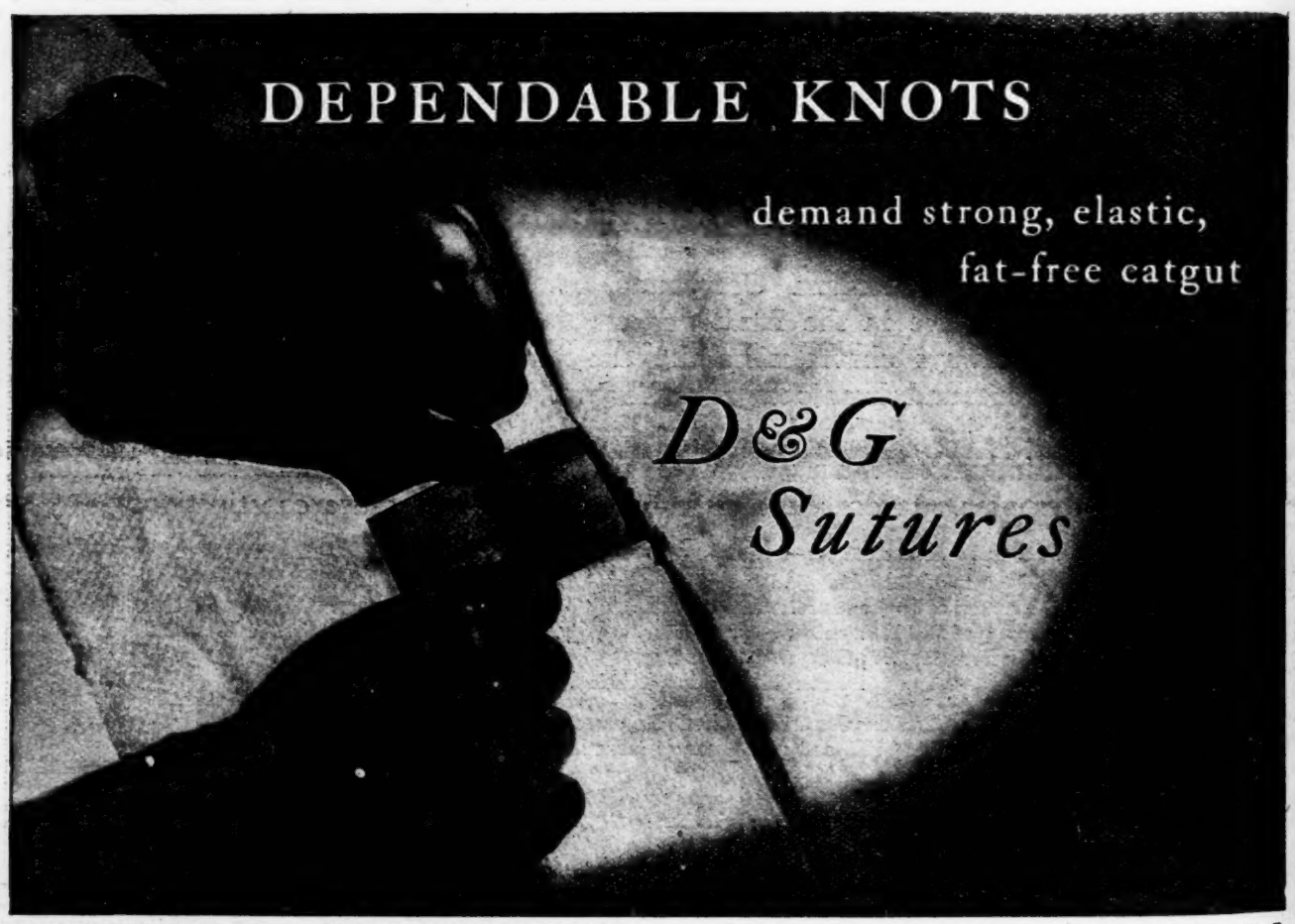

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DISCUSSION ON CHRONIC APPENDICITIS.

I.—SYMPTOMATOLOGY AND DIAGNOSIS.*

BY

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THE HISTORICAL POSITION OF APPENDICITIS.

IN this year and in this place it is hardly possible to begin the general consideration of any surgical subject without thinking first of its relation to that universal point of reference, the Listerian revolution in surgery. Of all the branches of surgery then practised, perhaps that of the abdomen responded less quickly than any to the stimulus of the antiseptic method. Of the new procedures that now became possible and that were so boldly put in practice by Lister few concerned abdominal surgery, and we even find him himself actually discouraging Keith from the application of the antiseptic system to ovariotomy. The last quarter of the nineteenth century was by far the most fruitful period that the art of surgery has ever experienced; and it was a period throughout of expansion that was as rapid as it was continuous and solid. During that time surgery had become, to an extent it had never before promised to do, an applied science, the successful practice of which was no longer wholly dependent on the exceptional specialized aptitude of its practitioners. Nevertheless it is only towards the end of this remarkable period that we find abdominal surgery beginning to take on something of its present form and to show the growth that has made it the largest branch of the art. Abdominal surgery appeared thus in the aftermath rather than in the primary harvest of Lister's work. In many branches of surgery the saving of wounds from external infection was the only step necessary to allow of immediate and rapid progress; in abdominal surgery this step, while equally indispensable, was rather in the nature of a beginning than of actual achievement. It brought the surgeon not to a summit, but to the foot of the final climb, and brought him there strong, well equipped, and confident. As soon as the danger of external infection had been disposed of it was possible for there to begin the accumulation of special physiological and pathological knowledge which is the very substance of abdominal surgery.

It might have been expected that such knowledge would be found through an extension of the small invasions of the abdominal field that had already been made in pre-Listerian days, and that had produced the three classical operations of colotomy, herniotomy, and ovariotomy. These were always risky, and to be used only in times of extreme need; their successes were as little open to rational explanation as their failures, but they did represent a definite though a small and precarious conquest from the chaos of abdominal disease. Yet it was not at all chiefly through the exploitation of them that the great modern province of abdominal surgery has been made. They have been incorporated in it, and have had a great and historic importance, but neither of them proved to be of critical value in surgical evolution.

It was in the middle "eighties" of the last century that Lister's work began to yield that second and secondary harvest which was in some ways even more valuable than its first. Those years, for example, saw the beginning of surgical neurology, and they saw what is especially relevant to our purpose here, the emergence of the conception of appendicitis from the study of the mysterious and deadly infections of the right iliac region. Here at last was an idea which could fertilize where Lister had sowed; here was a disease ideally suited for the construction of an abdominal pathology. It illustrated every aspect of an infection of internal origin, it illuminated the mysterious natural immunity of the peritoneum, and disclosed its limitations, and it showed in its simplest form the essentials of an intraperitoneal operation on the intestine. Its historical position thus gives to the surgery of appendicitis a peculiar significance and prestige, which it retains in spite of having in the due course of nature ceased in many of its aspects to occupy a leading place in controversy and progress.

EVOLUTION OF THE CONCEPTION OF APPENDICITIS.

In the early years appendicitis was known almost exclusively as an acute disease capable of producing the most serious abdominal emergencies, and demanding from the surgeon early and exact diagnosis and prompt and resolute treatment. In the evolution of knowledge in abdominal diseases it gradually became evident, however, that appendicitis has another aspect—that in addition to its power of causing acute and sometimes highly formidable attacks, it is capable of producing slow disabling illnesses, with perhaps even greater frequency. These more chronic manifestations are our exclusive concern here, and I shall try to set out a general statement of what seems to me to be their surgical meaning.

It is interesting to recall the well marked stages in which the surgery of the appendix has been built up. At first appendicitis came into the province of the surgeon in the form of abscesses in the right iliac region, which it was found could be satisfactorily treated by drainage. From these cases there gradually evolved the conception of the acutely inflamed appendix as the primary lesion and the regularization of operations to deal with it. A third phase was the recognition of incomplete spontaneous resolution, of the liability to recurrent attacks, and the appearance of the "interval" operation. A fourth phase may be marked off by the conception that the acute attack is no essential part of the disease, which may be chronic throughout and with but slight fluctuations in intensity. When it was recognized that the intensity of the local manifestations was not necessarily the sole measure of the significance of the disease, it became possible to observe the action of appendicitis in leading to distant symptoms and setting up disease in other organs. We may regard this as a fifth, and so far final, phase in the general conception of appendicitis. It is this phase which we have to discuss.

The Clinical Method.

Research in medicine has gained so much by laboratory experiment and methods of exact measurement that I find it hardly possible to use without apology that most characteristic medical instrument—inquiry of a merely clinical kind. This, the classical method of medicine, has many disadvantages, which are perhaps even too much insisted on at the present day; it is, for example, in its very nature inexact, and it is sadly dependent on the weaknesses of the human mind. For effective use it demands alert yet patient consideration of large bodies of heterogeneous facts, and it demands in the observer a familiarity with the material considered, closer than that which would be regarded as adequate in any other branch of natural history.

In dealing with our present problem a return to the old-fashioned clinical method is especially appropriate. It is a subject in which we can confidently assume that every one of us has a very large experience; this body of material is made up to a great extent of elusive symptoms and fine shades of ill health, in the estimation of which judgement and intuition are less likely to mislead than methods supposedly more exact; and finally, all the facts are matters of daily familiarity at the bedside and operating table. In these circumstances we shall do well to look only for broad and general conclusions and to attach to them no undue dogmatic weight.

When we come to close quarters with the problem of chronic appendicitis the first question that presents itself is whether such a disease exists as a primary condition. To answer that question we must consult our experience of the morbid anatomy of the appendix region as found at "interval" operations. The conditions we find seem to me to fall naturally into three groups which are practically distinguishable, though not sharply separated from one another.

1. The appendix and its neighbourhood show obvious relics of an acute attack. The residue of the attack may be, and usually is, (*a*) merely *quiescent*, as when the

* The opening paper of a discussion in the Section of Surgery at the Annual Meeting of the British Medical Association at Edinburgh, 1927.

appendix is distended throughout or in part, or when there is encysted pus outside of it; or (*b*) *obsolete*, as shown by obliteration of the appendix lumen more or less complete, with or without old inflammatory adhesions.

2. The appendix appears to be normal. This is, of course, a state very difficult to define. By it I mean to indicate an appendix not unduly long, not abnormally fixed, of uniform calibre, of normal vascularity, and empty.

3. The appendix and the region of it show no clear residue of an acute attack, but are abnormal in certain definite ways so that a fairly constant picture is seen. (*a*) The appendix is long; (*b*) it is abnormally fixed either by its mesentery in its proximal half, or by being tied down to the posterior wall of the caecum so as to leave only the tip free; (*c*) its calibre is not uniform, but shows a moderate dilatation usually towards the free end; (*d*) it contains elongated, separate, more or less firm faecal masses and its mucous membrane looks swollen and spongy; (*e*) the lymphatic glands at the root of the appendix and in the ileo-caecal angle have the subglobular shape and glassy look of a chronic inflammatory enlargement; (*f*) the caecum is rather large and inert and contains solid faecal material.

This third group of appearances—not always, of course, equally developed in all its features—is one frequently met with; it is commonly associated with symptoms that disappear after the appendix is removed, and as it does not appear to have any very direct relation to acute attacks, it perhaps deserves to be regarded as a primary chronic appendicitis.

SYMPTOMATOLOGY.

We see, then, that there are two broadly distinguishable pathological states which are met with in the course of the "interval" operation for appendicitis; first, the one we referred to as a primary chronic appendicitis, and secondly, the residuary condition left by an acute attack. Both are undoubtedly capable of producing a large range of symptoms, but since we are concerned only with very general considerations we shall not discuss the question of whether there is any difference between the symptoms caused by the two types. In the following remarks it is assumed that one pathological type is as capable of causing the whole range of chronic symptoms as is the other.

The Mechanism of Symptoms.

The clinical manifestations that experience shows to be associated with chronic appendicitis are many and complex. We may get a clue to the orderly presentation of them by noting two features in the pathological state that indicate the principal mechanisms at work in the production of symptoms. These features are, first, the evidence of septic absorption shown by enlarged lymphatic glands, and secondly, the evidence of disturbed motor and perhaps secretory function shown by the inability of the appendix to empty itself. As we see them at an operation these very familiar phenomena are, of course, purely local; they probably have, however, a much wider significance in making up the clinical picture of chronic appendicitis.

Septic Absorption in Chronic Appendicitis.

Clinical observation suggests very definitely that chronic appendicitis can produce a series of effects very much like those that may be produced by a chronically infected tonsil. The likeness between the two series is close, and the most cautious observer can scarcely fail to notice in both the special tendency to lymphatic infections, the occurrence of general toxaemic states, the possibility of distant infective lesions, and the incidence of symptoms in inverse proportion to the patient's age.

It is in childhood and youth that the effects of chronic appendix infections are most seriously shown, and it is then that is started the sequence of events which so often results in chronic ill health, dyspepsia, cholecystitis, and peptic ulceration in the adult.

For some reason or other the frequency and importance of the primary effect of absorption in appendicitis—affection of the lymphatic glands—have not received a great deal of attention. Glandular enlargement is common at all ages, but is especially so in young subjects. It is, in fact, unusual not to find it if it is looked for. Probably it is as common in appendicitis as in tonsillitis. The same series of states is met with—chronic enlargement, acute inflammation, tuberculosis. The last-named is doubtless a good deal less common than in the neck and usually runs a more favourable course. If the occurrence of calcification is to be taken as evidence of tubercle, the latter in a mild, easily recoverable form must be regarded as not uncommon.

There can be little doubt, moreover, that acute lymphadenitis is a frequent event in the chronic appendicitis of children and an important cause of local symptoms.

Of more distant absorption effects two groups are to be recognized—the abdominal and the general. The *abdominal* effects, as is now well recognized, are conspicuously shown in the upper abdominal organs—a fact which suggests a definite relation to infection by the lymphatic path. They are, of course, peptic ulceration and cholecystitis. I shall say little about this extremely important subject, which is so familiar as one of the recent and most distinguished successes of purely clinical observation. I cannot leave it, however, without making some reference to the closeness of the pathological relation between the appendix and the gall bladder. The frequency of cholecystitis in sequence to appendicitis, especially in young women and even girls, cannot fail to impress the clinician whose attention has once been called to it. Indeed, every case of apparently simple appendicitis must be scrutinized with the most anxious care for evidence as to the state of the gall bladder, for one of the common causes of failure of an appendix operation is the coexistence of chronic cholecystitis, with or without gall stones.

Another effect of the chronically infected appendix that may conveniently be mentioned here is its action as the point of entry to the urinary tract (and probably also to the blood stream) of infections of the colon bacillus type. There can be little doubt of the frequent coexistence of appendicitis and urinary infection, and the suggestion of a causal relation is often strong enough to justify removal of the appendix.

The *general* absorption effects of a chronic appendicitis are much less definitely established, and we shall do little service to knowledge by setting down a long and indiscriminate series of ills to them. With every effort to keep up a properly sceptical and realistic attitude of mind, I find that my experience leads me to suspect a relation between chronic appendicitis and certain defects of nutrition and growth in children, and in a less definite degree between it and certain so-called toxic affections of the heart, osteo-arthritis, and some chronic pustular affections of the skin. It does not seem that these can be regarded as more than matters of strong suspicion which must be left to exact inquiry or larger experience to confirm or explode.

Disturbed Function in Chronic Appendicitis.

It is evident that the chronically infected appendix has difficulty in emptying itself, and that this—probably combined with some defect in its secretory function—leads to the formation in its lumen of faecal masses of varying degrees of consistency up to that of actual concretions. This condition no doubt causes the appendix to become the seat of irregular and excessive muscular spasm. There is much clinical evidence that any such focus of abnormal contractions, and especially the appendix, tends to produce disturbances of muscular function throughout the gastro-intestinal tract. It is a familiar fact that in appendicitis either of the two opposite kinds of disturbance of the motility of the bowel may be met with, resulting commonly in constipation, but, on the other hand, not very infrequently leading to an undue hurrying of the intestinal contents.

It may perhaps be useful at this point to give a moment's consideration to the normal movements of the colon. It is manifest that the gaseous and the faecal contents of the bowel are passed along it at different rates, the former in a relatively rapid and continuous stream, the latter in a decidedly slower and probably less continuous one. The steadiness of the gaseous stream is

probably the best stimulus to the contractions which maintain the faecal stream. Now the smooth and symptomless passage of gas along the colon must demand a very exactly adjusted succession of contractions and is very easily disturbed by a minor degree of inco-ordination. Thus we see why the complaint of "flatulence" comes to be the commonest of all abdominal symptoms, and how, if we regard the infected appendix as a focus of disturbed motility capable of spreading to the colon, we can explain the great frequency in chronic appendicitis of abnormal colonic function and especially of constipation.

The other region of the gastro-intestinal tract that is especially sensitive to secondary functional disturbance is the stomach. Gastric movements and gastric secretion are notoriously apt to be upset by reflex mechanisms, and there can be little doubt that such processes are responsible for the well known gastric complications of appendicitis—gastric pain, nausea, capricious appetite, and flatulent dyspepsia.

In actual cases the secondary functional disturbances that accompany chronic appendicitis contribute largely to the symptoms of the disease. Their incidence on the stomach or on the intestine varies a good deal, but as a rule in any given case both factors are to be observed to a greater or less degree.

It is probable that the frequency and importance of the secondary consequences of chronic appendicitis are still often ignored. This applies especially to the disease as it occurs in childhood. I am fully convinced by clinical experience that in children a large number of the chronic dyspepsias, the recurrent types of vomiting, the conditions that may be called general abdominal delicacy, are due to simple chronic appendicitis and can be cured by removing the appendix.

DIAGNOSIS.

The diagnosis in a case of chronic appendicitis is concerned, on the one hand, with determining the existence of the disease itself, and, on the other hand, with deciding the presence or absence of complications, and consequently the scope of the necessary operation.

1. *Diagnosis of the Disease Itself.*

Such comments as I have to make on this aspect of the subject may be grouped in relation to the local symptoms and to the general abdominal symptoms.

(*a*) *Local symptoms and signs* include right iliac pain, tenderness and increased resistance, and increased tension of the right rectus. In observing the three physical signs in this group care and delicacy are necessary, because, on the one hand, the phenomena are often slight and easily overlooked; and, on the other, because the right iliac fossa is probably a little more sensitive in the normal than is the left. A definite difference in the tension of the two recti is probably the most trustworthy sign. With regard to the palpable resistance in the right iliac fossa, it is to be remembered that this is usually contributed chiefly by an overloaded and possibly thickened caecum—in itself a not insignificant evidence of appendicitis. At the same time resistance there may be due to local enlargement of glands—an important and direct piece of evidence. Such glands, if deliberately felt for, can frequently be made out, especially in children. There is one small local symptom I should like especially to call attention to, and that is a special and not very conspicuous kind of pain. It is a sudden momentary stab in the appendix region, in itself very sharp, but gone at once. It is of occasional occurrence, usually when the patient is walking. This "needle pain," as it might be called, is, in my experience, extremely characteristic; when it has been complained of the appendix has invariably been found to show definite pathological changes.

(*b*) *General abdominal symptoms* are of almost constant occurrence in chronic appendicitis, and should take a definite part in the diagnosis. Indeed, it is quite commonly the general abdominal symptoms that make the salient feature of the case and may well distract attention from its true nature. The groups of symptoms of this kind which should arouse interest in the state of the appendix can be fairly well defined. In adults there is the well known flatulent dyspepsia, there is the group of symptoms rather suggestive of peptic ulceration but lacking its most characteristic features, and there are the symptoms of irregular motility and secretion in the colon that are apt to be called "colitis." In children we meet with similar forms of flatulent dyspepsia, with recurrent attacks of vomiting or of diarrhoea, with "bilious attacks," with undue intolerance of certain foods, and, either alone or in combination with some of these, persistent or recurrent slight degrees of fever.

2. *The Complete Diagnosis.*

The decision that in a given case there is reasonable cause to suspect a chronic appendicitis can usually be made with a fair degree of confidence. This, however, is by no means the end of the diagnostic problem, for there remains to decide the possibility of some complication of the primary disease.

Three possibilities in this regard have to be kept in mind. First, and perhaps most frequent and important, is that of chronic cholecystitis; secondly, that of peptic ulceration of the stomach or duodenum; and thirdly, in women, especially those who have had acute attacks, is that of secondary infection of the Fallopian tube and ovary. It is admittedly a difficult matter to make sure that either of these complications is or is not present in a given case.

One obvious and not illogical solution of this problem is to make a full abdominal exploration in every case where it is decided to remove the appendix. In a certain number of cases this is undoubtedly the proper course, and the use of it is imperative. I do not, however, share the diagnostic pessimism which leads to its being regarded as generally necessary. The operation of exploratory laparotomy is a procedure of the greatest value and importance, but there are three aspects of it which we shall do well always to keep in mind. When carried out thoroughly it must be regarded as a considerable operation; it is in itself by no means without possible complications and sequels; and though its powers in the clearing up of diagnostic difficulties are great they are not wholly unlimited. In view of these facts the carrying out in a given case of a full exploratory laparotomy should always be a matter for very sober consideration.

If the easy solution of an exploration in every case is not accepted it is obvious that the need for full and exact diagnosis is greater than ever. When, however, all such precautions are taken there is reason to suppose that the necessities of the situation are to be met by grouping cases from the point of view of treatment into the three following classes.

1. Cases for removal of the appendix by the most straightforward method. This is a numerous class, largely made up of children and other patients in whom there is no clinical evidence whatever of a complication.

2. Cases in which there is reason to suspect some definite complication, so that, in designing the operation, it is necessary to provide for access not only to the appendix but also to the upper abdomen or to the pelvis. This group will include a large number of adults, and especially such as have had symptoms for long periods.

3. Cases in which a full exploratory operation is necessary on account of some special ambiguity in the symptoms or of a suspicion of malignant disease. It is plain that a great many of the middle-aged and elderly will necessarily come into this class.

If some such grouping of cases as this is carefully carried out we may entertain a reasonable confidence that while the extent of our interventions is not unduly great, we shall not incur serious risk of leaving important conditions unremedied.

It is to be feared that the foregoing remarks have failed to display appendicitis as an inspiring subject for formal discussion. It is a subject nevertheless which, however defectively set forth, must always possess two high kinds of distinction. The historic share of appendicitis in the evolution of abdominal surgery is one of these. The other is the fact that the diseased appendix is the first stage in a long series of pathological events, and thus affords the surgeon an opportunity for that ideal treatment in which there is a beneficent disproportion between the good he does and the trivial intervention by which he brings it about.

II.—DIAGNOSTIC DIFFICULTIES IN CHRONIC APPENDICITIS.

BY

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WHEN there is evidence of acute inflammation of the appendix or the patient says there has been an attack of appendicitis a careful history of that attack should be prepared, avoiding all leading questions, and with the endeavour to disclose the following symptoms in order of occurrence: first, colicky pains across the abdomen, or pain about the umbilicus; secondly, the sequel of nausea or vomiting; and thirdly, pain settling in the right iliac fossa with tenderness.

In such cases the diagnosis is very much easier, and I shall confine myself, therefore, to those who have symptoms of abdominal trouble of a chronic character.

In children and the young a chronic appendix lesion should always be suspected when there is a history of listlessness, capricious appetite, colicky pains at times, with perhaps nausea or vomiting. There is sometimes a dread of playing rough games on account of injury to the abdomen, and occasionally it is found that the child cannot bear anything firm round the abdomen, such as a belt. If there is tenderness on palpation over Munro's point the diagnosis is practically complete. There is present at times a small area of tenderness a little below and to the left of the umbilicus, and occasionally also over the pylorus. If pressure is kept up over Munro's point and at the same time applied over each of these other two tender points it is often found that the tenderness at these two points is abolished or greatly lessened.

Tuberculous glands are not uncommon in the right iliac fossa, and may produce local pain and discomfort. There is not the same digestive disorder, and the tenderness is nearer the middle line and more diffuse. It is always well to examine the tonsillar lymphatic glands, which, when they show enlargement, at once suggest the probability of tubercle.

It is necessary to beware of the cyclic vomiting of acidosis. A medical practitioner may see the child several hours after the onset of vomiting and find a tender area in the right iliac fossa due to overaction of the muscles in the course of frequent vomiting. The history of excessive vomiting and the onset without previous abdominal pain should arouse suspicion.

In adults there is a method of examination which sometimes is of value and might be called flat palpation. A flat disc of metal or a small book about four inches in diameter is laid over the area of the abdomen where pain and tenderness are felt. This is pressed firmly down and the patient is asked to put a finger on the disc at the spot where the pain is greatest.

In the adult there are certain conditions of the abdominal wall which may give rise to difficulty. First, neuralgic spots may occur, similar to those in intercostal neuralgia. These spots are nearer the middle line; they are often bilateral, and on palpation of the terminal ends of the intercostal nerves areas may be found there as well. Secondly, there is occasionally found a condition of incipient inguinal hernia which gives rise to pain and tenderness, but this pain and tenderness is situated over the internal abdominal ring. A good test for this possibility is to apply a small turkey sponge and a spica of crêpe bandage before getting out of bed; if the day passes in comfort the diagnosis is clear. I mention this because I have operated several times on such patients and found a sac only about one inch long, though cure resulted from the operation. One patient had had his appendix removed and three subsequent operations for adhesions. Thirdly, there is a rare condition which might possibly give rise to difficulty, and that is strain or slight rupture of fibres of the rectus muscle, with resultant pain and tenderness. In this case there is, however, a sudden onset during some act of straining. The pain is superficial and over the outer border of the rectus.

Visceroptosis, which usually occurs in women, is associated very frequently with pain in the right iliac fossa. The history will include a gradual onset, constipation, and signs such as the narrow intercostal angle and general configuration. On palpation there is often gurgling in the caecum, a more diffuse tenderness, and, if the right kidney is palpable, the diagnosis is facilitated. When, in addition, it is stated that benefit always results from lying down and relief is obtained from a low abdominal support, visceroptosis is certainly the first thing to be treated.

When there is any suspicion of gynaecological trouble I obtain the assistance of a gynaecologist.

In men, and more rarely in women, duodenal ulcer may be very closely simulated by chronic appendix trouble. There is a history of pain at the pylorus commencing an hour or so after a meal and relieved by taking food; potatoes are often mentioned as an article of diet that is shunned. The patients will add that they are quite well for a day or two or longer, and then suffer pain for a few days, which is markedly irregular compared with the periodic long duration of ulcer pain.

Occasionally there is a reference to pain which radiates at times to the right iliac fossa. On examination pain is present on pressure over the pylorus and also over the appendix. If pressure over the appendix is continued while the pyloric region is palpated, it will be found that in a great many cases the pyloric pain disappears or is greatly alleviated. This is a most helpful sign in the diagnosis of chronic appendix trouble.

That chronic gastric disturbance is common with chronic appendicitis is proved by those patients who terminate in an acute attack, and, having had their appendices removed, report that their gastric trouble has disappeared also.

Tuberculous glands in the ileo-caecal angle, either subacute or calcified, may cause local pain, but the tender area is nearer the middle line and is more diffuse; there may be other evidence of tuberculous disease. Early tuberculosis of the caecum may closely simulate the chronic appendix, but the frequency of colicky pains without nausea is suggestive of obstruction rather than local inflammation.

Renal and ureteral affections may also simulate the chronic appendix, be there bacilluria or stone. The frequency of micturition, the pain over the ureter or kidney, and the examination of the urine will generally prove the diagnosis.

Symptoms of gall-bladder trouble may be most closely simulated when there is an undescended caecum or a long appendix running upwards with the tip lying close to the gall bladder.

Pneumococcal infection of the appendix, and at times of the caecum, must also be mentioned; one of my patients had the whole colon involved. The appendix is thickened and buff coloured, and when the caecum and colon are involved they also show the same characteristics, which are very marked. One patient, an active young man, had undergone a long course of treatment for duodenal ulcer, but at operation his appendix was found to be typical of pneumococcal trouble, and a culture showed the pneumococcus and Friedländer's bacillus.

III.—GYNAECOLOGICAL CONSIDERATIONS IN CHRONIC APPENDICITIS.

BY

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THE subject of chronic appendicitis is of the greatest interest to gynaecological surgeons, because of the close anatomical relationship that exists between the appendix and certain of the female pelvic organs. The right ovary and tube lie close to, and in many cases in touch with, the appendix, whilst the right ovario-pelvic ligament reaches the brim of the pelvis by passing under the caecum, and in its course is intimately related to and often more or less blended with the mesentery of the appendix, and the

attachments of the caecum and ascending colon to the posterior abdominal wall. The result is that it is often difficult to distinguish pain due to chronic appendicitis from that due to some morbid state of the right appendage, or to some condition which gives rise to a drag on the right ovario-pelvic ligament. Appendicular pain may be attributed wrongly to an origin in the pelvic organs, and, conversely, pain originating in the pelvic organs may be misconstrued as arising from the appendix. Of the two mistakes I should say the second was far the commoner. During the years 1923 to 1926 inclusive, 5,613 men and 5,577 women were admitted to the surgical wards of the Middlesex Hospital—a practically equal number. During that time 216 operations for acute appendicitis were performed on men and 293 on women—a proportion of 10 to 13. In the same period 172 operations for chronic appendicitis were performed on men and 309 on women—a proportion of 10 to 18. These figures are suggestive.

Of the gross morbid states of the right appendage which may cause pain simulating chronic appendicitis I would specially cite chronic salpingitis, and ovarian blood cysts, otherwise known as endometrial cysts or "chocolate" cysts. Many cases of right-sided pain are diagnosed as due to chronic salpingitis. In this connexion we may divide cases of chronic salpingitis into two classes: (1) those where a definite swelling is produced owing to distension of the tubes with pus or watery fluid, or to gross thickening of the wall of the tube, or to associated follicular cystic degeneration of the ovary; (2) those in which the tube is merely closed and adherent, but without any material thickening or distension. My experience is that it is only the first of these two classes which is commonly accompanied by pain; tubes merely adherent and closed at their outer end do not give rise to pain, and are often found accidentally in the course of operations for other disease without there having been any previous indication of their presence. This being so, right-sided pain not associated with a definite swelling or thickening in the region of the appendage is almost surely not due to chronic salpingitis.

A diseased appendix may be adherent to the right tube or the right ovary, or to both; in some cases these organs are also diseased, either by secondary infection from the appendix, or an inflammation chronic in them before the appendix itself became inflamed. Accurate diagnosis in such cases is impossible, nor does it matter, so long as the right treatment is recognized—namely, to operate on the patient.

The other condition to which I would specially draw attention—namely, ovarian blood cysts—is very important; first, because it seems to be one of those morbid states the frequency of which is apparently increasing; and secondly, because these cysts give rise to pain which in certain respects is very like that due to appendicitis. I may remind you that these cysts are nowadays held to be due to the ovary containing within its substance islands of tissue histologically similar to endometrium. These islands are formed of a cellular stroma with glands embedded in it, like those seen in a section of corporeal endometrium; moreover, they exhibit the haemorrhages, interstromal and interglandular, such as are found in menstruating endometrium. How these endometrial islands come to be embedded in the ovary is too controversial a subject to enter into now, nor does it concern the subject in hand, but this intra-ovarian menstruation produces collections of blood in the substance of the ovary having the same appearance and constitution as the chocolate-coloured fluid which fills the vagina in a case of imperforate hymen. Ovarian blood cysts are very palpable by the time they attain any size, for not only is the ovary enlarged and densely adherent, but a curious and very typical thickening affects the anterior wall of Douglas's pouch, due to implantation in islands of tissue identical with that found in islands in the ovary. The back of the cervix and the upper part of the vaginal wall, with the peritoneum covering them, are in short the subjects of an endometriomatosis. In this phase of the disease no confusion with chronic appendicitis could occur, provided the patient was examined vaginally, but it is otherwise in its early stages, for then the enlargement of the ovary may be too slight to detect, especially in stout women, with the result that the pain, which comes in attacks corresponding to successive haemorrhages into the ovarian substance, is very easily mistaken for that due to recurring attacks of appendicitis. In making a diagnosis it should be remembered that the attacks of pain due to this intra-ovarian menstruation nearly always bear a definite relation to the woman's periods, either occurring at the actual time or a few days before, whereas in appendicitis, no such relationship is observable. Each increment to the cysts is accompanied by a local peritoneal irritation, yet fever is absent, and the patient does not exhibit those signs which suggest a lesion of the bowel to the experienced clinician—namely, a dirty tongue, foul breath, and nausea.

Of all the gynaecological conditions capable of simulating chronic appendicitis the most important are those which give rise to a drag on the right ovario-pelvic ligament, and of these retroversion of the uterus is far the commonest. It might be thought that, since a retroverted uterus must drag on the ligament at both sides, therefore the pain should always be felt on both sides; and no doubt it is often thus reported, but in a large number of cases it is only, or chiefly, felt on the right side. This is undoubtedly due to the different anatomical relationships of the two sides, and this seems to indicate that pain does not originate so much in the ligaments themselves as in the structures that they secondarily pull upon. On the right side it is the caecum or the appendix, or both, which are thus affected. There is a further mechanism which obtains in cases of retroversion to which I would draw attention—namely, that when the uterus no longer occupies its normal position an empty area, so to speak, is created, into which the intestines prolapse. Thus, on the right side, the head of the caecum may come to lie upon the posterior walls of the bladder, while on the left side a loop of the pelvic colon may occupy the same position.

I am in complete agreement with Mr. Wilfred Trotter that it is very difficult to define a normal appendix, but I am of opinion that, in many of the cases in which a woman is operated upon for alleged chronic appendicitis, the pain is really due to strain on the attachments of the caecum and appendix, either because the prolapsed caecum is hanging on them, or the ovario-pelvic ligament is pulling on them. I am led to this conclusion because I see so many cases of right-sided pain in which the appendix has been fruitlessly removed before the patient came to me, and in which operative cure of a retroversion or prolapse immediately cured the pain. It may be submitted that, given an unhealthy appendix, traction or drag on the appendix or appendicular attachments must accentuate the symptoms due to the appendix, and this is undoubtedly true, but it does not account for the large number of cases in which I have operated for alleged appendicitis and have cured the patient, not because the appendix I removed was macroscopically or microscopically unhealthy, but because I found and relieved at the same time one or other of the displacements to which I have referred.

It is most important in all cases of suspected chronic appendicitis in women to examine very carefully before the operation the condition and position of the uterus, and the parts adjacent to it, in order to exclude the possibility of the pain being due to ligamentous drag. It should be remembered that the pain due to this cause is always markedly accentuated, or only occurs, when the patient is up and about. Recumbency causes it to disappear, or to be much less marked. To estimate properly uterine or vaginal displacement patients should always be examined in the standing posture.

I would emphasize most strongly the necessity of making a middle-line incision in all operations for alleged or suspected chronic appendicitis in women, for it is only in this way that the presence or absence of the other causes of right-sided pain to which I have referred can be absolutely ascertained. If this was made the rule we should cease to see that very common class of case where the appendix has been removed, through a beautiful little two-inch lateral incision, for a pain which was due to gross disease or deformity of the woman's generative organs.

IV.—ETIOLOGY AND SEQUELS OF CHRONIC APPENDICITIS.

BY

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IT is difficult to visualize and understand the pathological changes responsible for the clinical condition so often described as "chronic appendicitis." That an acute inflammatory attack may be cut short, and the changes abate with resulting deformity, thus making the appendix more prone to a future attack, is a condition which can be clearly envisaged; but that inflammatory changes may persist for years, being chronic throughout the whole of their course and never progressing to an acute condition, yet having profound effects upon the body as a whole, and especially upon certain other viscera, is a condition almost impossible to accept, and our credulity has to be considerably strained to believe that inflammatory changes of this sort could lead to so much alteration in the lining membrane that considerable absorption could take place and could lead locally to advanced fibrosis, and yet never progress to an abscess formation. Doubt as to the presence of such a condition is increased by the clinical observation that so many such cases have been operated upon, with the removal of a fibrous and distorted appendix, and no improvement of the clinical symptoms has followed. Many, therefore, have come to believe that there is no such condition as a chronic primary appendicitis, and Willys Andrews has formulated the dictum, with which many will agree, that a chronic appendicitis should never be diagnosed unless there has been at least one acute attack.

The two important questions to which considerable attention has been directed, and which I shall alone consider to-day, are: (1) Is there a primary chronic appendicitis, and, if so, what are its symptoms? (2) What is the relationship of chronic changes in the appendix to lesions in the upper abdomen?

Primary Chronic Appendicitis a Doubtful Entity.

In the large number of cases which have been operated upon for chronic pain in the right iliac fossa the chief pathological changes found are a diffuse fibrosis of the appendix with obliteration of the lumen, usually commencing at the tip and steadily progressing downwards, and the presence of periappendicular bands binding the appendix to the caecum or under-surface of the mesentery. It is very doubtful indeed whether these two changes are dependent upon primary inflammatory changes or are not rather evolutionary or degenerative. It has been found by many observers that a large number of appendices removed from patients over middle age are fibrous, although there have been no clinical symptoms indicative of appendicitis. There is also no question but that the greater number of patients who complain of persistent iliac pain are women who are subjects of visceroptosis. It is in just such cases that the caecum is found to be mobile, and there is the presence of membranous bands—the so-called Jackson's membrane, which varies considerably in its extent. In nearly all cases it runs in part over the appendix and binds it down, and may easily be mistaken for inflammatory adhesions. In the past a very large number of such cases were operated upon in the belief that the right-sided pain was due to the presence of such a change, but it has since been widely appreciated that the appendix is not the viscus at fault. Very many young women who are generally the subjects of mild virginal ptosis complain of pain which is localized in the right iliac fossa, and which persists or recurs for years. Sherren[11] has drawn special attention to this condition, and has even stated that pain commencing in the right iliac fossa is not due to chronic appendicitis. Maclaren[5] has had a very similar experience, having found that the appendix is frequently removed for chronic appendicitis with unsatisfactory results; but he here clearly distinguishes the so-called chronic appendicitis from the relapsing type, and he adds that a patient who has once had a true attack of appendicitis is always in danger. Stanton[12] investigated a series of 100 cases which had been operated upon for chronic appendicitis, and found that only 64 patients had been cured of their symptoms, 36 being unrelieved. The errors in diagnosis were chiefly dependent upon the presence of a mobile caecum. Williams and Slater[13] produced evidence from another angle, for they found that one-third of all women operated upon for pelvic conditions showed undiagnosed lesions of the appendix, and they therefore expressed doubt as to whether such a condition as "chronic appendicitis" existed. The chief pathological changes were adhesions, pericaecal folds, and chronic fibrosis, which were considered to be of no clinical significance. Unfortunately the belief in the presence of such a condition has persisted owing to the fact that a large number of patients who have been suffering from virginal ptosis have been operated upon in the expectation that a gastric ulcer would be found, and the only pathological change discovered within the abdomen was one of these lesions of the appendix. This viscus was removed, and owing to the patient having been insufficiently kept under observation after operation it was believed that the operation had led to a cure. Moreover, there are certain cases of virginal ptosis, especially those seen in girls or young women, where the symptoms somewhat closely resemble those of true appendicitis. It is the inclusion of these cases of ptosis which has led to the belief that chronic appendicitis is a common condition.

On the other hand, there are cases with symptoms referable to the right iliac fossa or simulating those of a gastric ulcer—the so-called "appendix dyspepsia," due to very definite changes within the appendix, such as pus within the lumen, dense adhesions, or strictures with concretion formation behind them. In my experience, however, all such patients have had at least one acute attack. If there has been more than one attack the symptoms are steadily progressive, so that there is never a history of more than two or three attacks at most.

Careful investigation of these cases will, I believe, always lead to an easy differential diagnosis. Not infrequently a change within the appendix may be diagnosed, when there is in reality a lesion of the renal organs or of the pelvic viscera. In the diagnosis of true inflammations from other intra-abdominal lesions the first importance must be placed upon a past history of at least one acute attack. In such an attack the pain will have been severe at first, generalized over the abdomen, and only later referred to the right iliac fossa. It will have persisted for at least one or two days and generally have laid the patient up in bed. The diagnosis will have been strengthened if there has been one attack of vomiting at the commencement of the attack, and if the temperature has been slightly raised. If there has been more than one attack they will not have been very frequent. At most there will have been three or four, and they will have been getting progressively worse. In virginal ptosis, on the other hand, there will often have been a history of thirty or forty attacks persisting over several years. Some of these may have been momentary and the others have lasted only for an hour or so, but rarely are they sufficiently severe to make the patient lie up.

The pain will generally have been intense at first, diffused over the abdomen, and only later localized to the right iliac fossa. It will not have been increased by exercise, nor will it be relieved by lying down, being in these points very clearly distinguished from the pain of caecal dilatation.

In my experience the nature of the hyperaesthesia is one of the most important of physical signs, and its nature being so often misunderstood it has led to more errors of diagnosis than any other point in the history or the physical signs. The area of hyperaesthesia which is found with distension of the appendix is a relatively narrow band running along the groin from the anterior superior spine to the spine of the pubes, being about 1½ in. wide and being bisected by Poupart's ligament. This band is clearly seen in cases of acute appendicitis within the first twelve hours. The hyperaesthesia of a dilated caecum found with a virginal ptosis is situated to the right of and below the umbilicus and lies over the position of the appendix. It is very variable and may even form a band running half-way round the body, but never extends below Poupart's ligament. I can say

definitely that if a patient with pain in the right iliac fossa has an area of hyperaesthesia extending higher than the level of the anterior superior spine, it is most certainly not due to distension of the appendix.

Another very important point is the relation of the physical signs to the time of the onset of the symptoms. In some cases of dilatation of the caecum the pain may persist for four or five days, but there is no progression in the physical signs. If a patient has had an attack of acute appendicitis for this length of time there is certain to be either a perforation or a tumour due to a localized abscess or to dense inflammatory adhesions. Hence, if at the end of five or six days the symptoms persist, but there is no lump to be felt or no definite rigidity, it is unlikely that the appendix is at fault.

We may say, therefore, that there is no doubt as to the presence of such a condition as chronic appendicitis, but it is much rarer than is usually supposed, and is always the end-result of an acute attack. I have personally operated upon 982 cases of appendicitis. Of these, acute lesions were present in 622, the appendix either containing pus or showing acute inflammatory changes passing on to perforation or gangrene. The remainder, 360 in number, had in practically every case a past history of at least one typical acute attack. Only 11 of them have been classified as appendix dyspepsia, a condition which also in my experience has been characterized by an acute attack, which has then been followed by symptoms somewhat closely resembling those of gastric ulcer or gall stones. In my opinion these figures strongly support the view that chronic appendicitis does not exist as a primary disease, but only occurs after an acute attack.

Relation of Chronic Appendicitis to Changes in the Upper Abdomen.

That lesions in the upper abdomen, and especially those in the stomach and duodenum, can occur in association with infections of the appendix is well known. When I was working as registrar at the London Hospital in 1910 there occurred in our wards one or two cases of severe haematemesis after operations for acute suppurative appendicitis. I therefore worked out a series of cases occurring in the hospital in the three years 1907 to 1909 inclusive. In this series there were 24 patients who died from severe haematemesis after operation, and of these 13 had acute appendicitis. A similar proportion was found in a series of acute ulcers found accidentally after death, but the patients had not had severe haematemesis. It is of interest to note, however, that haematemesis and acute ulceration may occur in association with sepsis in any part of the body. It is well to lay stress upon this fact lest it be hastily assumed that the appendix itself is a direct factor in the causation of lesions in the upper abdomen, for it is quite possible that if gastric and appendicular lesions are found together they are due to a similar infection passing down the intestinal tract, or it is even more probable that the infection is blood-borne from any septic focus within the body to the mucosa of the stomach.

Evidence of a close relationship between chronic lesions of the appendix and those of the stomach and duodenum has also been produced. Fenwick,[4] investigating the nature and cause of gastric hypersecretion, found that of 112 cases of hyperchlorhydria 22 had chronic changes in the appendix. The next step was the work of Ewald,[3] Paterson,[8] and Sir Berkeley Moynihan,[6] who pointed out that a chronic lesion of the appendix might sometimes give rise to a group of symptoms closely resembling those of a gastric lesion, and Paterson, in a later paper,[9] showed that chronic appendicitis would not only simulate a lesion of this sort but might actually coexist with such a condition. He found that in his series of duodenal ulcers there was definite appendicular disease in 66 per cent.

As a result of this work it has become clearly established that there is a condition which can best be described as "appendix dyspepsia," but my own experience has very definitely shown that it is relatively rare. In my own series of 982 cases of appendicitis there were only 11 in which undoubted disease of the appendix sufficiently closely simulated a lesion of the stomach to give rise to a diagnosis of a chronic ulcer. Moreover, in all these cases there had been at one time or another a definite history of an acute attack such as is found with true cases of chronic appendicitis. The diagnosis was only accepted if there was a distinct inflammatory change within the appendix, such as a localized abscess or infiltration of the mucosa and submucosa. In all of them there was simply a clinical resemblance between the two conditions, and at operation no organic lesion was found in the stomach or duodenum.

The actual relation between chronic inflammatory changes in the appendix and those in the stomach is not so clearly defined, and many surgeons would not admit that it is found in so high a proportion of cases as Paterson found. Sir Berkeley Moynihan in 1921,[7] and J. Schoemaker in 1925,[10] have laid stress upon a condition of vascular congestion of the pyloric antrum with pyloric spasm which is sometimes found with inflammatory changes elsewhere. Schoemaker had 45 such cases, in 17 of which a partial gastrectomy was performed, so that he was able to study the pathological changes. In none of these cases was there any gastric ulceration. In 16 of them the appendix had been removed, but a chronic obliterative appendicitis was found in only 4 of them, it being quite normal in the others. In the cases where the appendix was alone removed the symptoms continued, and there was, in addition, one case which occurred four years after the appendix had been removed. On the other hand, Deaver and Ravden[2] examined the appendices removed from 76 cases of gall-bladder disease and 18 cases of gastric and duodenal ulcer. They found that the appendix was definitely diseased in 90 per cent. of the gall-bladder cases and in 61 per cent. of the ulcer cases. Braithwaite[1] believed that a diseased appendix might be shown in a stomach by three conditions: (1) pyloric spasm, (2) pyloric congestion, and (3) enlargement of glands in the great omentum. By injection methods he was able to show that there was a direct lymphatic path between the appendix and its mesentery up the lymphatics along the ileo-colic artery, and so to the glands around the pylorus. These few contributions are illustrative of many others that have been written claiming to show that there is a very close relationship between these two conditions, and as a result many have come to believe that a primary disease in the appendix is an important factor in the causation of gastric and duodenal ulceration, and advocated its removal in all cases. Others have even claimed that the failure to perform such a step in an operation for gastric and duodenal ulceration is a very potent factor in the later formation of gastro-jejunal ulceration. The pendulum has to-day swung much too far, and it not infrequently happens that patients have been operated upon in the belief that an ulcer was present, and, no such lesion being found, the appendix has been removed, the surgeon stating that the operation had been performed at so early a stage that the ulcer had not yet developed. I have met with a considerable number of such cases where an operation of this sort has been performed and no relief has been gained. The presence of chronic fibrosis or of membrane formation has been accepted as evidence of a chronic lesion in the appendix when the patient has really been suffering from visceroptosis or some allied condition.

The other fault upon which Sherren so often laid stress is also not uncommon—that an appendix has been operated upon when the patient was really suffering from a duodenal or gastric lesion; but these viscera have presumably not been examined, and no relief has followed. In these cases the taking of a careful history and the conscientious investigation of the clinical condition should prevent mistakes of this sort, for although the symptoms of lesions of the appendix may somewhat resemble those of a gastric ulcer, careful inquiry will nearly always lead to a correct diagnosis.

It is, however, of great importance to estimate as far as possible what is the actual relationship between these two conditions, and I think that the figures of my own cases throw considerable light on this subject. To the date of my last analysis I had performed 1,738 operations for lesions of the upper abdomen. Of these, 1,003 were for chronic ulcers of the stomach and duodenum, 46 for other non-malignant diseases of the stomach and duodenum, 204 for cases of carcinoma of the stomach, 401 for lesions of the gall bladder and ducts, and 84 for lesions of the pancreas. In all these cases it is my custom to make a sufficiently large

incision to explore the abdomen thoroughly. The appendix is in every case carefully examined, but it is removed only if there is definite evidence of disease. If it is injected, inflamed, markedly thickened, distended, or even contains many concretions, it is taken out, but a mild degree of fibrosis or the presence of membranes and filamentous bands is not regarded as sufficient evidence of disease to warrant removal. The appendix was excised in 73 cases, approximately 4 per cent.; if it had been definitely inflamed or had been the primary cause of the upper abdominal lesion, there should have been further trouble in a considerable number of cases, yet in my total number of gastric and duodenal ulcers the incidence of gastro-jejunal ulceration was considerably under 2 per cent.; or, taking only the cases of pyloric and duodenal ulcer, which may be regarded as the only group likely to be followed by this complication, the incidence was between 2 and 3 per cent. This rate compares favourably with many of the published statistics, and I think, therefore, it can be accepted that the omission to perform routine appendicectomy does not in any way increase the possibility of the after-formation of gastro-jejunal ulceration. Of the total of over 1,700 cases only 5 have afterwards developed acute appendicitis. This is an incidence of 0.28 per cent., and is probably but very little, if indeed at all, higher than the incidence in the general population. All these cases have been most carefully watched in a follow-up department, and I feel confident that few, if any, of such complications have been overlooked. These figures show clearly that the relationship between chronic appendicitis and lesions of the upper abdomen is much less intimate than has been believed. The appendix should certainly be examined in every case of such a lesion, but it is only necessary to remove it if there is very definite evidence of disease, and it is never justifiable to inform a patient that the removal of a slightly fibrous or adherent appendix will relieve her of severe abdominal pain.

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DISCUSSION.

Mr. H. N. FLETCHER (Brighton) said that if the surgeon followed up his patients who had been operated upon for chronic appendicitis he would find many failures. In 82 cases he had investigated about one-third were failures. In 11 the diagnosis made at the operation was obviously wrong—in 4 cases glands in the mesentery or chocolate cysts in the ovary had been discovered; of the remaining failures the majority were cases of visceroptosis. A history of previous attacks was very important. The symptoms of appendicular dyspepsia were indistinguishable from those due to ulcer of the stomach, and 10 cases of the 82 had been cured by removal of the appendix. *X* rays were useful in diagnosis. If the appendix filled well appendicitis was not present, even though there was much delay in emptying. If the appendix did not fill, or filled irregularly, chronic appendicitis was present.

Mr. A. H. BURGESS (Manchester) thought that tenderness over the right iliac fossa was a good sign of the disease, but there should be comparison of the opposite side by symmetrical pressure. It was very important to have a history of acute attacks. The gridiron incision was only used when the diagnosis of appendicitis was practically certain, and only then when the patient was a child. In all other cases he advised thorough abdominal exploration. By following this routine he had discovered an early carcinoma of the colon on six occasions, and early carcinoma of the lower ileum associated with a well marked duodenal ulcer. If the patient was in such a condition that he could not stand this prolonged operation, it was better, unless the case was urgent, to improve the general health medically and wait until the exploration could justifiably be undertaken. The speaker removed the appendix during the course of this examination, even if it appeared healthy.

Mr. ANDREW FULLERTON (Belfast) pleaded for the thorough examination of patients with chronic pain in the right side of the abdomen in whom chronic appendicitis was suspected. He declared that cases of hydronephrosis, cysts of the kidney, even calculus and tumours, might not give rise to any changes in the urine. In doubtful cases specimens of the urine from the two sides should be compared. In cases of calculus, cysts, or tumours the urine secreted from the affected kidney showed a diminished specific gravity. In this way a renal origin for the pain might be discovered.

Mr. G. H. COLT (Aberdeen) referred to the palpation test for chronic appendicitis demonstrated by the late Mr. Lockwood. Pressure over McBurney's point elicited a flatulent crepitation which was quite distinct from the large gurgle made by a distended caecum, and was recurrent from minute to minute. He found this test of the greatest possible use, and had only known it wrong three times in a series of 500 cases. When the sign was negative it almost certainly indicated that the appendix was not inflamed, nor were there bands of adhesions. The area of hyperaesthesia described by a previous speaker did not agree with the area he found to indicate that of appendicitis, which was, he stated, triangular in shape, higher, and more to the middle line.

Mr. TEMPLE MURSELL (Johannesburg) called attention to Rovsing's sign of pressure in the left iliac fossa, which caused pain in the appendix area; he had found it extremely reliable. In South African natives acute appendicitis was very rare, but chronic appendicitis was not. He did not believe a history of an acute attack was necessary to diagnose chronic appendicitis.

Professor D. P. D. WILKIE (Edinburgh) said that in the past there had been too much operating for chronic appendicitis. Removal of the appendix often failed to cure. The public would submit to operation much more easily than they could be induced to have a complete investigation in order to reach a correct diagnosis. He thought that one of the problems facing the practitioner was to educate the public to seek a thorough investigation. He pleaded for more care before operation. He thought that *x* rays were of value for showing an associated lesion in the stomach or duodenum, but for the diagnosis of chronic appendicitis they were useless. However, tenderness in the situation of the appendix under the screen was of some value.

Mr. TROTTER, in his reply, agreed with Professor Wilkie, and said that he regarded chronic appendicitis as important because it was frequently the beginning of a train of abdominal disease. Believing this, he thought it was often desirable to perform appendicectomy in children. Tenderness in the right iliac fossa was in 99 per cent. of cases of no importance in diagnosis, while visceroptosis might not really be a pathological entity.

THE ACTION AND USES OF OVARIAN EXTRACTS.*

BY

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THE endocrine function of the ovary may now be regarded as established. Knauer showed in 1900 that this organ was intimately connected with oestrus and that ovarian grafting could at least partly antagonize the effects of spaying.[1 2] This ovarian action is evident in both sexes. If a portion of an ovary is grafted into a castrated male the mammary glands and teats hypertrophy, the glands

* The opening paper of a discussion in the Section of Therapeutics and Pharmacology at the Annual Meeting of the British Medical Association in Edinburgh, 1927.

secrete, and the animal resembles a pregnant female; a condition obtains which Steinach calls hyperfeminization. In the male the development of the mammary glands is uninterrupted, the Graafian follicles mature but do not rupture, but the implanted ovaries soon pass into cystic degeneration. In the female the development is slower and shows a rhythm which is apparently associated with the development of the Graafian follicle, and in the regressive phase with its rupture and the formation of the corpus luteum.[3] Loeb has advanced evidence for believing that follicular development is governed by the corpus luteum.[4]

It is also well recognized that the ovary does not function till puberty and that the essential features of puberty are caused by some internal stimulus. A young ovary engrafted into an adult male or female will begin its secretion sooner than its age warrants, whilst an adult ovary engrafted into a young animal will not function until the animal reaches maturity. The stimulus to ovarian function can only be obtained through the mature tissues, whether male or female.[5] This fact is of great practical importance since in cases of infantilism it is not necessarily the ovaries which are primarily at fault, and ovarian transplantation will not necessarily improve the patient, although, as no doubt will be shown in this discussion, even in these cases ovarian hormones can produce a sexual cycle.

The literature contains plenty of examples of the beneficial effect of ovarian transplantation both in men and animals. Thus a bitch aged 17 years after an endoperitoneal transplantation showed rejuvenation, sexual activity, and gave birth to five normal puppies.[6] Bell analyses 118 cases of ovarian grafting, and states that menstruation was possible in 107 of these and occurred in 71;[7] Sedukoff[8] transplanted an ovary into a horn of the uterus in two sterile women and obtained normal menstruation.

The present discussion has as its object the determination of how far it is possible to substitute normal ovarian function by ovarian hormones. It should be mentioned here that menstruation is not the same as oestrus, and experiments on lower animals cannot necessarily be referred to man without qualification. Another point to which reference is necessary is the quality of the various extracts at present on the market: different manufacturing firms make their preparations often by very different methods. The ovary differs from other organs from which extracts are made in that it functions in a cyclic manner. I propose to show that its extract may exhibit different properties according to the stage of the cycle. Manufacturers, however, so far as I know, take little account of this fact. Again, the medical practitioner who uses extracts of ovary administers them in various ways—intravenously, subcutaneously, or orally. These two variables must be held responsible for some of the failures and general lack of uniformity in clinical results.

From the ovary at least three different substances can be obtained.

Oestrin.

Oestrin is the hormone which is most definite and most readily prepared; when it is injected subcutaneously into spayed rats and mice it produces typical oestrus with normal sex instincts, and when injected into immature animals it induces puberty.[9] Like other hormones, such as adrenaline and thyroxine, oestrin is of the same nature in all animals.

The hormone is probably produced by the Graafian follicles at one stage of the ovarian cycle, the concentration in the ovary being least in the post-menstrual period and greatest just before menstruation. It is present in the wall and fluid of the ripe follicles.[10] In pregnancy it is also present in large amounts in the placenta and the blood[11]; in pregnant women it can be detected with certainty in the blood from the eighth to the tenth month. In other women it may also be detected in the blood about fifteen days before the onset of menstruation; it increases in amount till menstruation appears, when it may be detected in the menstrual blood, though not in the circulation.[12]

Oestrin is a thermo-stabile liquid soluble in all lipoid solvents and also in water under certain conditions, and can be obtained free from cholesterol. The aqueous extracts lose their power in a few days. It is recognized by physiological tests. Three of these have been used: (*a*) the vaginal smear test; (*b*) the action in virgin or spayed rabbits causing the uterus, vagina, and mammary glands to hypertrophy; (*c*) the action on the type of contraction of the isolated uterus. None of these tests is absolutely specific. Thus it is stated that orchitic extracts give a positive result to the vaginal smear test,[13] and that the female willow catkins suitably extracted exert a like action on castrated rodents, though the effect is said to be more gradual in onset.[14]

An indication of the amount of follicular hormone in a tissue can be made by injections into spayed rodents; since this subject is being dealt with fully by Miss Coward it is only necessary to say that the unit is the least amount of lipoid extract required to produce a definite effect in the spayed adult rat, and that the figure is by no means constant. For clinical purposes the extract should be put up in ampoules each containing 10 rat units per cubic centimetre. By such methods it has been demonstrated that a woman's ripe follicle contains from 3 to 5 units.

Injections of oestrin into spayed animals produce all the characteristics of a heat period. When the concentration of hormone is maintained continually and in sufficient amount a continuous oestrus results.[15] The uterus enlarges and the increase in weight of the virgin rabbit's uterus within a few days of the administration of the hormone forms a qualitative test of activity. This hormone also promotes the building of endometrium. Menstruation is due to the cessation of the influence of this hormone, and, therefore, to obtain an emmenagogue effect in women the injections should be interrupted at suitable intervals.[16] On the other hand, animals can be kept sterile by continuous injections.[17]

As oestrin exerts this remarkable action it might well be that injections into pregnant animals by bringing on oestrus would cause abortion. Margaret Smith[18] found it was possible to interrupt pregnancy in rats during the first five days by injecting oestrin, but that it was not possible after the fifth day. Parkes and Bellerby,[19] in mice, found that even in the later stages injections in sufficient amounts will nearly always terminate pregnancy.

Some observations have also been made on women and monkeys after ovariectomy. Oestrin promoted the growth of the uterus. In monkeys menstruation occurred when the injections ceased; in women the "subjective symptoms" of menstruation only occurred, but no bleeding approximating to that in normal menstruation.[20]

Before leaving this hormone it should be noted that evidence exists for supposing that the production of oestrin is influenced by the anterior lobe of the pituitary gland.

Corpus Luteum Hormone.

A large mass of experimental observations shows that the corpus luteum is concerned with the rhythm of the oestrus cycle and with the prevention of ovulation; also it is known that a persistent corpus luteum, both in animals and women, will produce sterility, a condition which is cured by its removal. The presence of fully formed corpora lutea inhibits ovarian secretion, and this condition obtains in animals for a time between the heat periods and more particularly during pregnancy. In women there is plenty of pathological evidence to show that functional corpora lutea are not present during menstruation.

If the corpora exert this controlling action on ovarian function, then their removal should release the normal ovarian function. Removal of the corpus in animals, rabbits (Fraenkel), goats (Drummond Robinson), etc., during pregnancy is invariably followed by abortion. On the other hand, injections of properly prepared corpus luteum prevent ovulation. Pearl and Surface[21] found this for the hen, Kennedy for the rabbit.[22] Papanicolaon[23] also finds that corpus luteum inhibits and delays ovulation and oestrus in the guinea-pig. One other effect can be induced by these injections—namely, hypertrophy of the breasts, and, during pregnancy, growth of the maternal portion of the placenta. Shaw[24] has shown that the corpus luteum is mature in women on the nineteenth day and persists till the twenty-seventh; during menstruation it is degenerate. He also thinks that it is responsible for the

production of the premenstrual changes and of the decidua if pregnancy occurs.

Clinically treatment with extracts of corpus luteum has been disappointing, and it is easy to understand the reason. These glands are only functional at one period in their cycle; the degenerated corpus is inactive. Few manufacturers are likely to have assistants sufficiently skilled to make this distinction. Nevertheless remarkable clinical results have been claimed for this form of therapy, and many cases are on record of women who habitually aborted going to full term when treated with corpus luteum extracts.

Interstitial Hormone.

The third substance which can be prepared from ovarian extract was described by Marshall and myself. This substance is water-soluble and thermo-stabile, and can be prepared from the ovary, at one stage of its cycle only, by maceration with warm saline followed by boiling and filtering. The injection of this substance into animals causes a secretion of the posterior lobe of the pituitary gland, and this in turn renders the uterus supersensitive and highly responsive to other forms of stimulation.[25]

The pituitary secretion passes either entirely or mainly into the cerebro-spinal fluid. Histological examination has shown that the gland is suspended in a bath of the fluid and has an opening in communication with the ventricles. Since the experiments of Marshall and myself this secretion of pituitary into the cerebro-spinal fluid has been confirmed many times, more particularly by Trendelenburg,[26] Janassy and Horvath,[27] and Miura,[28] and there can now be little reasonable doubt of this fact. It has been suggested that the secretion of oxytoxic substance is not really pituitrin, but some other substance, and to this it can only be replied that it exerts every known chemical and physiological action of posterior lobe extracts. In my Dohme lectures I gave the last piece of evidence in this respect by showing that it also exerts the melanophore dilator action on the frog, an effect which, so far as I know, is quite specific. Trendelenburg has also described this action.

The pituitary gland must be intimately connected with the phenomenon of pregnancy, because statistics show that the size and weight of the gland in men and nulliparae are about the same. In primiparae the weight has increased by about 50 per cent., and in multiparae by about 90 per cent., though most of this increased weight is due to the anterior lobe.

The posterior pituitary substance has at least three actions of importance in medicine: it inhibits the secretion of urine, it has an antagonistic action to the insulin effect, and it sensitizes and, in large doses, contracts plain muscle on the uterus. This latter action is so profound that it overshadows all the other muscular effects, and pituitrin may be said to have a true specific action on uterine muscle in rendering it supersensitive to every form of extraneous stimulus.

Our experiments showed that in only one stage of the ovarian cycle was this hormone elaborated—namely, at the stage of degeneration of the corpora lutea. So long as these corpora are functioning they govern the metabolism of the ovary, and neither the oestrin nor pituitary hormones are free to act, but when the corpora degenerate both are liberated and exert their effects—that is to say, extracts of the ovary made between the heat periods or during pregnancy are without effect on the pituitary gland, but extracts made just before the heat period or just before parturition induce secretion of the gland. As the significant action of pituitary extract is to sensitize the uterus it is difficult, if not impossible, to avoid the conclusion that these two phenomena are closely associated. It is true that insulin also causes the pituitary to secrete,[29] but this cannot be of importance in these experiments since the blood sugar in anaesthetized animals, into which the ovarian extracts are injected, is invariably increased as a result of the anaesthetic.

The facts are, then, that the ovary just before parturition and just before the heat periods contains a hormone which causes the pituitary gland to secrete. It is well known that substances introduced into the cerebro-spinal fluid find their way almost immediately into the blood, and hence it should be expected that extracts of blood of pregnant rabbits at the time of delivery should contract the uterus, which has been found to occur. Similarly the blood of women collected at the time of delivery contracts the guinea-pig's uterus to a considerably greater degree than normal blood.[30] The same effect was shown by Mayer in a different way.[31] He collected the cerebro-spinal fluid from women during Caesarean section. This fluid he injected subsequently into ten women with deficient labour pains. In eight of the women pains were induced, which in four were followed by the birth of the child. In another case an intradural injection was made, which was followed by labour pains within twenty-four hours. Mayer states that the cerebro-spinal fluid in labour contains the active principle of the pituitary responsible for the production of uterine contraction.

All these experiments consistently support the view that in the presence of fully formed corpora lutea the normal ovarian secretion is held in abeyance, and this is the condition for a short part of the time between the heat periods, but more particularly during pregnancy. In other words, the corpus luteum may be supposed so to dominate ovarian metabolism at these periods that the ovarian secretion, which at other times activates the pituitary, is inhibited or else is neutralized by the secretion coming from the corpus luteum. At the close of pregnancy, when the corpora lutea are in an advanced stage of involution, the normal secretory activity is once more produced, and the pituitary gland is excited to secrete in greater quantity. When the threshold stimulus of the pituitary secretion upon the uterus is reached the pains of labour set in and parturition results. The well known phenomenon of the growing irritability of the uterus in the later stages of pregnancy, which is the typical effect of the pituitary action, is explained as being functionally correlated with the involution of the corpus luteum. In our experiments ovarian extract gave positive results at all times excepting when the organs contained well developed corpora lutea, but the effects produced were undoubtedly more marked in the case of the ovaries obtained at or about the time of labour. The hormone which stimulates the pituitary gland is produced in greatest abundance at these periods.

Rogers also thinks that such a hormone exists; it is stated to be of approved value in such conditions as hypo-ovarianism and dysmenorrhoea, and is, he thinks, effective if administered by the mouth.

It is not suggested that the ovario-pituitary endocrine mechanism is the sole factor in producing labour pains. No doubt the foetus itself acts as a direct stimulus, and without the foetus the intense muscular contractions would not occur, but it seems equally clear that the onset of labour cannot easily be accounted for without postulating some further exciting cause apart from the foetus and uterus.

Oestrin, which I have examined from several sources, has not this action on the pituitary secretion. Oestrin is especially effective in bringing on abortion in the early stages of labour, and Dr. Addis will explain what the effect of ovarian extract in the later stages of pregnancy may be.

In conclusion, no romance can be more remarkable than the fact that doctors, by using pituitary extract to stimulate the uterus in pregnancy, even to the exclusion of ergot, should have adopted the method which Nature has herself employed from times immemorial.

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Discussion.

Dr. KATHERINE A. COWARD (London) said that the standardization of ovarian extracts was based on their power to induce oestrus in ovariectomized animals, but the dose of any extract required to produce this condition in a rat varied so much that a large number of animals had to be used for the assay. A "curve of response" had been drawn up on the results of subcutaneous injections of different doses of a particular sample of ovarian extract to each of ninety ovariectomized rats; it took the form of a somewhat flat S-shaped curve. It was significant that while some rats responded to a dose of 2.5 mg. of this extract, some did not respond even to a dose of 17.5 mg. The doses of 2.5, 7.5, 12.5, 17.5 mg. respectively, were given at fortnightly intervals, then a dose of 10 mg. was given, and the number of animals responding fell exactly on the curve which had been drawn through the first four points, which indicated that the extract had not deteriorated in value, nor had the rats become less sensitive. Half the rats were then given another dose of 10 mg. subcutaneously, and half were given the same dose intraperitoneally. There was no significant difference between the results of the two methods of injection; injecting the dose in three small parts at intervals of four hours did not make the response any better than injecting the whole dose at one time. The unit of oestrin was defined as that amount which would produce oestrus in 50 per cent. of the animals tested, twenty animals being used for each test. When the response to a given dose had been found, reference to the curve would give the dose required for a 50 per cent. response, and the assay of the material could be given as 1 unit per x mg. or as x units per c.cm. A similar test was performed at the same time on 70 ovariectomized mice, using exactly the same doses of the extract as those employed in the rat experiment. It was surprising to find from the identity of the curves that the rat unit was equal to the mouse unit, and was, therefore, quite independent of the weight of the two species of animal. In the rat experiment it was also noted that the response to a given dose bore no relation to the weight of the animal.

Dr. A. S. PARKES (London) discussed the interaction of the oestrus-producing stimulus with the corpus luteum, and the function of the corpus luteum in maintaining pregnancy. There was much definite evidence that one function of the persistent corpus luteum was the inhibition of oestrus and ovulation during pregnancy, and in the last few years it had been found possible to simulate this action by inhibiting oestrus and ovulation in the normal animal by the injection of extracts of corpus luteum. Since it was possible to override the oestrus-inhibiting power of the persistent corpus luteum by the injection of the oestrus-producing hormone, the conception was suggested of an alternating dominance of oestrus producer and oestrus inhibitor, it being possible to override each in its normally dominant phase by the artificial augmentation of the other. As regards the function of the corpus luteum in maintaining pregnancy, many experiments on the elimination of the corpora lutea had shown that the corpora were necessary during at least the greater part of gestation. These experiments had, however, not been entirely conclusive. To eliminate the corpora lutea double ovariotomy or manipulation of the ovary during the operation had always been employed. The latter operation was of necessity attended by a considerable operation shock, while the former abolished all ovarian activity. To overcome these difficulties the following technique had been devised. Young mice were sterilized unilaterally by x rays, and the animals when adult thus possessed one normal ovary containing both Graafian follicles and corpora lutea, while the other ovary had neither, but was capable, as already shown, of performing all ovarian endocrine functions except those associated with the corpora lutea. The animals were then allowed to become pregnant, and at various stages of pregnancy one or other ovary was removed. Animals in which the ovary removed was that containing the corpora lutea invariably aborted or reabsorbed the foetuses, while those in which the sterile ovary was removed had in every instance an uninterrupted gestation. With any possible operation shock thus controlled, these experiments had seemed to show definitely that in the mouse, at any rate, the presence of corpora lutea was essential for the normal progress of pregnancy. As regards the light thrown by these experiments on the mechanism of parturition, it was very doubtful whether the normal atrophy of the corpus luteum towards the end of pregnancy could be compared with its experimental elimination earlier. There was much evidence which seemed to show that an ovarian-pituitary parturition mechanism was set in motion by this normal atrophy of the corpus luteum, but in view of the relative insensitivity of the uterus to pituitrin during early pregnancy, it was probable that the abortion which followed early removal of the corpora was not dependent upon such a mechanism.

Dr. W. R. ADDIS (Manchester) described the use of ovarian extract without the corpus luteum in the induction of labour, and in dysmenorrhoea due to inadequate uterine contractions. In the first case five intramuscular injections, each of 1 c.cm. of ovarian extracts, were given at three-hourly intervals. If these failed the injections were repeated after an interval of twenty-four hours, the uterine contractions being kept under careful observation. In 50 cases so treated there were 4 failures; 31 patients were primiparae. The average duration of labour was: first stage, twenty-three hours; second stage, two and a half hours; and third stage, fifteen minutes. All the children were born alive and well. The patient hardly felt the uterine contractions during the first stage—a point of considerable interest, and comparable with intestinal and rectal muscular contractions, as well as with the freedom from pain during labour which occurred in some less civilized peoples. It appeared, therefore, that the ovary produced a hormone which acted specifically on the uterus, originating a bipolar action directly through the autonomic system.

Dr. W. F. T. HAULTAIN (Edinburgh) said that it had been his practice for at least five years in cases where both ovaries had been removed, either with or without the uterus, to give such patients a course of ovarian extract, beginning on the fifth day following operation by giving 5 grains three times a day and continuing it for two months. For the next two months 5 grains were taken twice a day, and for the fifth and six months following operation 5 grains were given once a day—the idea being to minimize the menopausal symptoms by decreasing doses of ovarian extract. If the symptoms became more severe the dose was increased. Out of 31 patients so treated, 24 took ovarian extract for one month or more, and there were 7 who did not, the latter including principally hysterectomy and salpingo-oöphorectomy cases. The general health was improved in 19, 12 patients became stouter, and of these 6 were cases of salpingo-oöphorectomy and under 40 years of age; 9 had periods of depression. In 14 cases flushings were severe, in 7 slight, while three had practically no flushings at all. After a period of twelve months flushings were only present in 8; of these 6 were cases of salpingo-oöphorectomy under the age of 40, in whom the uterus had been left. This result compared very favourably with the patients who had not taken ovarian extract, for in 6 of the 7 who had not received it flushings were still present at the end of twelve months, headaches occurred in 8, while nervous symptoms were manifested in 5. Flushings were very much improved by the treatment. The ovarian extract seemed to have helped the patients with regard to adiposity, headache, and nervous symptoms, but most of all in regard to flushings. Dr. Haultain thought that when both ovaries had to be removed then the uterus should be taken out also, especially in cases of chronic or purulent salpingitis. The ovarian extract had been administered orally, and Dr. Haultain concluded that if it were given hypodermically once or twice a week following operation the results would be even better.

Dr. W. KENNEDY (Edinburgh) believed that the disappointing nature of ovarian medication was due to the very diverse and sometimes uncritical methods adopted. The

species and oestrous period of the animal from which the gland was derived, the methods of extraction and of exhibition, and the diseases for which the substances had been used were all of prime importance. Dr. J. C. Hirst had shown that the intravenous administration of corpus luteum in the pernicious vomiting of pregnancy was effective. The speaker had also found that the corpus luteum would inhibit ovulation, and indeed in continued dosage would produce extreme degeneration of the follicular apparatus. The evidence was not plentiful, but it was very probable that there was a direct relationship between ovarian function and the blood sugar level. The speaker was surprised that Miss Coward had found mouse and rat units identical in oestrin standardization, as this was contrary to the usual finding. Further, it was undoubted that the lutein cells arose from the theca interna in some animals, the membrana granulosa in others, and possibly from both in some others. It was, therefore, necessary to specify the species in any assertion as to the endocrine function of these cells.

Dr. DAVID CAMPBELL (Glasgow) raised the question whether the injection of ovarian extract into animals had any inhibiting effect on the activity of insulin. With Dr. Scott he was investigating this point, and up to that time their results were as follows: (1) Subcutaneous injection of oestrin or the lipo-soluble ovarian hormone and of watery extracts of the ovary had no effect on the blood sugar of a normal animal. (2) Subcutaneous injection of oestrin twenty-four hours before, and again simultaneously with, insulin injection had no inhibiting effect on the action of insulin when compared with control experiments. (3) Subcutaneous injection of watery extracts of ovary given at the same time as insulin had no inhibiting effect on the action of insulin when compared with control experiments. Dr. Dixon, however, in his experiments, had used the intravenous route, and had showed that the apparent effect on the pituitary gland was transitory, lasting only ten to twelve minutes. Dr. Campbell had tried to determine whether the intravenous injection of watery extracts would have any effect on the blood sugar of an animal in the state of insulin hypoglycaemia. These experiments had not progressed very far, but up to the present there was no evidence to suggest that it did inhibit insulin activity; occasionally the reverse effect had been observed. It might be that they had used extracts of ovaries taken at a time when there was no hormone present, and it was necessary to investigate this point further before they could say definitely that ovarian extracts had no inhibiting effect on insulin activity through the medium of the pituitary gland.

Professor C. W. GREENE (United States of America) called attention to work by Professor Edgar Allen of the University of Missouri, who was a pioneer in the discovery and scientific testing of oestrin. Professor Allen had recently been testing the reactions of ovariectomized monkeys. His publications on this new work had not yet crossed the Atlantic. Allen first established the sexual cycle of individual monkeys and then removed the ovaries. Follicular extracts were then given in repeated doses. The animals reacted with all the phenomena of the normal oestrus—reddening and swelling of the skin of the vulva, reddening of the ischia and adjacent skin, and growth of the mammary glands. The uterine-vaginal growth changes occurred as in the normal, and menstrual bleeding actually occurred in these test monkeys.

Dr. DIXON, in reply, briefly referred to the work of Dr. Addis, and laid stress on the fact that the action of pituitary extract was essentially to render the uterus supersensitive to any form of stimulus. Dr. Addis and he were in entire agreement regarding facts, but Dr. Addis thought that the ovary acted directly; all previous investigators were agreed that it exerted no such action. In reply to Dr. Campbell, he referred to a paper written by Dr. Wadia and himself, and published in the BRITISH MEDICAL JOURNAL, showing that insulin also excited the pituitary gland to secrete as it did other endocrine glands. He referred finally to the primary work of Allen and Doisy, and explained to Professor Greene that if the names of these two investigators had not been mentioned in the discussion, it was not that their pioneer efforts had not been appreciated, but rather because their conclusions were generally known and accepted.

THE CLINICAL FEATURES OF ECTOPIC PREGNANCY.*

BY

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THERE is an extensive and very complete literature on the subject of ectopic pregnancy, and I cannot hope to add anything new to what has already been written. In the early part of this year, however, I reviewed a hundred cases operated upon by myself, and it may be of interest to refer to some of the main clinical features in the light of the results obtained from an analysis of that series.

Pregnancy in one or other Fallopian tube is by far the most common variety, and as all my cases come under that heading I propose to leave out of account the other and rarer forms. I will also say very little about the pathological anatomy of ectopic pregnancy, except to mention the frequency of the various terminations found at the time of operation in my own cases.

Tubal abortion occurred in 52 per cent., tubal rupture in 37 per cent., and the tubes were unruptured and unaborted in 12 per cent. A tubal mole was present in nearly 80 per cent. of the cases.

ETIOLOGY.

Most authorities agree that the chief predisposing cause of ectopic pregnancy is a preceding pelvic infection which so damages the Fallopian tubes as to obstruct or delay the passage of the fertilized ovum to the uterine cavity. The results of pelvic infection may be visible to the naked eye at the time of operation in the form of adhesions, especially about the non-gravid tube, and the frequency of this factor can therefore be determined with some accuracy. It has to be remembered, however, that gonococcal infection may be limited in its results to the tubal mucosa, and be incapable of demonstration except by careful histological examination.

In my own series old-standing adhesions about the non-gravid tube were observed in 50 per cent. of the cases, but as this leaves out of account those in which the gravid tube only was affected or the mucous membrane alone damaged, it will be realized that the percentage is probably much higher.

Gonorrhoea and puerperal septic infections are undoubtedly mainly responsible for the pelvic inflammatory lesions, but appendicitis and abdominal tuberculosis are also important. There were four patients who had had previous operations for appendicitis, and in the course of my own operations I found the appendix adherent in twelve cases, in ten of which it was found necessary to remove it. The appendix was not always examined, however, so the incidence of this source of infection is probably greater than I have indicated. In this connexion it is interesting to note that tubal pregnancy is somewhat more common on the right side—59 per cent. as against 41 per cent. in my own series.

Developmental abnormalities, such as tubal diverticula and distortion of the tubes by tumours, also play a part, though I think it must be a very subsidiary one. I found only one example of developmental abnormality, a double uterus, and the malformation was probably in no way responsible for the extrauterine pregnancy. Fibroid tumours were observed in two cases (about 2 per cent.), but in both instances the tumours were small and not situated near the uterine cornua.

There are certain other factors which have a bearing on

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the question of etiology. Age in itself is of little importance; the youngest patient was 21 years of age, the most elderly 43 years, and the majority were between the ages of 26 and 35 years. In 40 per cent. the condition occurred during the first five years of married life, and 35 per cent. during the second five years. In about 10 per cent. the patient had been married one year or less (the shortest period was seven weeks), and in every one of these the ectopic was the first pregnancy. Evidence of previous pelvic infection was present in only one case, so there must obviously be some other cause to seek in the case of recently married and apparently healthy young women who start their child-bearing career with an extrauterine pregnancy.

Nearly one-third of the cases had never had a previous uterine pregnancy; of these 2 were single, 8 had been married one year or less (shortest period seven weeks), 5 one to two years, 5 two to three years, 3 four to five years, and 9 more than five years (longest period ten years).

The proportion of uterine abortions to full term pregnancies was not abnormally large, but it was noticed that the last pregnancy terminated in abortion in 20 per cent. of the cases, and in 10 per cent. this abortion was the only previous pregnancy.

The interval between the last uterine pregnancy and the operation for ectopic gestation exceeded three years in 55 per cent. and five years in 31 per cent. of cases; this lends some support to the view frequently put forward that ectopic pregnancy commonly follows a period of sterility. The shortest interval in the series was seven months, but I know of one case operated upon by a colleague within four months of a full-term labour.

Diagnosis.

The diagnosis of ectopic pregnancy is based upon a symptom-complex which includes one or more of the three cardinal symptoms—amenorrhoea, irregular uterine haemorrhage, and abdominal pain. Pain on defaecation is also important, but is not encountered with the same frequency.

John Morley has pointed out that shoulder-tip pain is not infrequently met with in the graver forms of tubal rupture where the peritoneal cavity is suddenly flooded with blood. In the general run of cases dealt with by the gynaecologist this symptom will not be met with very often, but in those very acute cases often diagnosed merely as acute abdomens and sent into a general hospital it will no doubt be found much more frequently.

Amenorrhoea I found present in 72 per cent. of my cases. I include, of course, those cases where the patient merely goes a few days or perhaps a week or two over her period and then commences with uterine haemorrhage. The latter constitute the vast majority in any series, as it is unusual to find a longer period of amenorrhoea than two months. Amongst my own cases there were only two in which the foetus was of more than two months' development.

Abdominal pain is practically always present, as I found it in 97 per cent. of cases. It varies in character and degree according to the lesion, but it is generally sufficiently prominent to indicate to the patient that something is wrong. The colicky pain associated with a pregnancy still in the tube or in process of abortion is almost invariably situated on the same site as the gestation, although I have seen the contrary stated. The acute lancinating pain met with in cases of diffuse intraperitoneal haemorrhage is definite, striking, and requires no further elaboration. There is also a more diffuse pain associated with gradual leakage of blood or repeated small haemorrhages into the abdomen and the formation of protective adhesions.

Irregular uterine haemorrhage was found in 82 per cent.; the blood was almost invariably moderate in amount and dark in colour, with an appearance which has been likened to prune juice or black-currant jam. Very occasionally the blood was brighter in colour and more profuse, and in these I think that the uterine decidua was actually in process of separation.

The old explanation that the uterine haemorrhage is the result of decidual separation and expulsion is obviously not complete, since it is well known that it may persist after the decidua has been completely expelled, and even after the uterine cavity has been curetted. On the other hand, the haemorrhage ceases almost immediately when the gravid tube has been removed, the only exceptions being those cases where the decidua is incompletely separated and is still in the uterus at the time of operation. Sampson believes that the haemorrhage is due to subinvolution, the process of involution being delayed by an incomplete termination of the tubal pregnancy. In other words, some of the chorionic villi are still alive in the tube, and are able to exert their stimulus upon the uterus.

The importance of the three main symptoms depends upon their presence in combination and not individually, and an examination of the histories of my own cases shows to what extent they can be depended upon in this respect. Amenorrhoea, uterine haemorrhage, and abdominal pain were present in 64 per cent. Bleeding and abdominal pain occurred in 24 per cent. Amenorrhoea and abdominal pain were found in 4 per cent., amenorrhoea and bleeding in 3 per cent., and abdominal pain only in 3 per cent. From these figures it would appear that all three cardinal symptoms may be expected in six out of every ten cases, and when characteristically present a correct diagnosis of ectopic pregnancy should be made without difficulty. The order of their occurrence was usually found to be amenorrhoea, abdominal pain, and then uterine haemorrhage.

The complete clinical picture varies according to the lesion present, and it is convenient to divide the cases into the following three groups or clinical types.

1. Cases in which the ovum remains in the tube and there has been little or no haemorrhage into the abdomen. There were 14 of my cases in this group, or 13 per cent.

2. Cases in which rupture or abortion has occurred with diffuse intraperitoneal haemorrhage—29 cases, or 27.6 per cent.

3. Cases in which rupture or abortion has taken place with gradual or repeated haemorrhage into the abdomen—62 cases, or 60 per cent.

In Group 1 are included those cases in which the pregnancy is intact, and also those in which a blood mole has formed. In the latter a definite group of symptoms and physical signs can usually be obtained, but in the former it is doubtful if a definite diagnosis will be possible.

The patient complains of colicky pain in one or other iliac fossa, and frequently of irregular uterine haemorrhage, dark in colour and moderate in amount. The bleeding can in no sense be described as a flooding. She will generally have gone a week or so over her period, and other signs and symptoms suggestive of early pregnancy may be present. She is not acutely ill, but may look quite definitely out of sorts.

Abdominal examination will yield little information, except perhaps some tenderness on pressure over one iliac fossa. On vaginal examination the uterus may feel somewhat enlarged, and it will usually be possible to make out through one or other lateral fornix a tender elastic sausage-shaped swelling. In many cases, however, the physical signs will be inconclusive, and in these the advisability of careful examination under anaesthesia should be seriously considered.

In the differential diagnosis, appendicitis, threatened uterine abortion, inflammatory tubal swellings, and small ovarian or broad ligament cysts, possibly associated with a uterine pregnancy, will present the greatest difficulties.

When the gestation is in the right tube the condition is apt to be mistaken for appendicitis, the patient being sent into the surgical wards of a general hospital. Appendicitis, however, presents a very definite symptom sequence—namely, pain, usually epigastric or umbilical, nausea or vomiting, local iliac tenderness, fever, and leucocytosis—and this will not be observed in cases of ectopic gestation. Nor will there be found in appendicitis a combination of any symptoms or signs suggesting a pelvic origin—for example, amenorrhoea, uterine haemorrhage, and tender extrauterine swelling.

Threatened uterine abortion should present little difficulty. There will be definite enlargement of the uterus, with, perhaps, some dilatation of the cervix; pain, if present, will be in the back or hypogastrium; the bleeding will be more profuse, bright in colour, and possibly associated with the passage of some clots; and there will be no extrauterine swellings to be palpated.

Inflammatory tubal swellings, when mistaken for ectopic pregnancies belonging to this group, will generally be of the subacute or chronic variety, and will often be bilateral. There will usually be a longer history, vaginal discharge will have been complained of, amenorrhoea will be absent, and menstruation, if affected at all, will usually be too frequent and the loss excessive.

Where a small ovarian or broad ligament cyst is associated with an early pregnancy the diagnosis is apt to be more difficult, but here again the character of the haemorrhage, if present, will afford a clue. If no haemorrhage be present the uterus will be found definitely enlarged and soft, and the extrauterine swelling not usually tender. The swelling will also have thinner walls, and feel more cystic than a gravid tube, points easily made out and of great value in clearing up the diagnosis.

In Group 2 there are also two varieties. In one the haemorrhage is sufficient to prostrate the patient, who either dies or is operated upon immediately. In the other she reacts, and if not operated upon during the acute attack manages to weather the storm, and when dealt with surgically at a later period will present the characteristics of a case belonging to Group 3. To these Schumann has applied the terms asthenic and sthenic respectively.

In the asthenic variety the patient is suddenly seized with an agonizing and lancinating pain in the lower abdomen, accompanied by extreme nausea and vomiting; syncope, collapse, and shock rapidly follow. The pulse becomes thin and rapid, the temperature is subnormal, the features are pallid, the skin is cold, clammy, and blanched, the respirations become shallow and rapid with frequent sighing, the pupils are contracted, and the expression is anxious. There is intense restlessness and thirst. On examination the abdomen is found somewhat distended and resistant to pressure, and it may be possible to demonstrate the presence of free fluid. Tenderness and rigidity will be noted in some cases, but not in all, depending, no doubt, on the time which has elapsed since the actual rupture or abortion took place. On vaginal examination it will usually be possible to detect a fullness in the posterior fornix, or even a doughy feeling if clots be present. The affected tube may or may not be palpated. The sudden onset of symptoms and the general appearance of the patient will frequently be the chief points on which a diagnosis is made, but they are sufficiently characteristic to warrant this in nearly every case.

In the sthenic type the onset is very much the same, but the patient rallies in a short time and the pain becomes less acute. The temperature rises to 101° or higher, and the pulse remains full and strong and is not unduly rapid. The expression is anxious, the skin is not usually pallid, and the mucous membranes are not blanched. The abdomen is distended, and extremely tender to pressure. Rectus rigidity is the rule, and is usually more intense on the affected side. Shoulder-tip pain may sometimes be elicited. There is tenderness on vaginal examination and a sensation of fullness or a doughy feeling through the posterior fornix as before.

The descriptions I have given of the two types of cases are taken largely from Schumann's excellent monograph on extrauterine pregnancy, and agree with my own observations in cases belonging to this group. In the differential diagnosis various acute abdominal catastrophes, such as perforation of the stomach, gall bladder, or appendix, have to be excluded, but the history of the case, the sudden onset, and the persistence of extreme pallor and subnormal temperature without rigidity of the abdominal wall, in a patient previously well except for some menstrual irregularity, seldom or never leave room for doubt. (Zachary Cope.)

The sthenic type of case may be mistaken for an acute salpingitis and treated expectantly for a time. Amenorrhoea followed by bleeding is occasionally found in these cases, so a correct diagnosis will have to be based on the short and characteristic ectopic history and the presence or otherwise of a purulent vaginal discharge or other symptoms pointing to a recent pelvic infection.

Group 3 will always comprise the majority of cases in any series, and the clinical picture will vary from that of an acute and dangerous illness to what may fairly be described as a chronic disability. The most serious cases will include those from Group 2 already referred to, and also a certain number (ten in my series) in which the amount of encysted blood is sufficiently large to form a definite tumour capable of displacing neighbouring structures and possibly reaching above the pelvic brim.

The patient complains of abdominal pain of moderate severity and usually situated in one or other iliac fossa, though later it may be diffused over the lower abdomen. There will nearly always be irregular uterine haemorrhage of the characteristic ectopic type. Careful investigation of the history will usually discover a short period of amenorrhoea followed by uterine bleeding of varying duration. A severe attack of pain followed by collapse may have occurred, or there may have been several less severe attacks accompanied by momentary faintness.

Pain on defaecation is commonly met with, and sometimes dyspareunia. If the amount of blood in the pelvis be large there may be constipation amounting to obstruction, or painful or frequent micturition, or even retention of urine. The patient looks ill, though usually not acutely so, and there is generally some degree of anaemia. The temperature is slightly higher than normal, and may occasionally be over 100°. The abdomen is tender on pressure, especially over the affected side, but there is no rigidity. There may be a sensation of resistance over the pelvic brim or a definite tumour may be palpated. In the latter case the percussion note is partly dull and partly tympanitic, as the mass consists of both blood clot and adherent intestine.

Vaginal examination will reveal a tender mass in one or other lateral fornix, and if the blood in the pouch of Douglas be clotted a tumour will be felt through the posterior fornix also. When a large haematocele is present the uterus will usually be displaced forwards and upwards, but if there has been bleeding into the broad ligament with the formation of a haematoma, the uterus will be pushed over to the opposite side.

Cases belonging to this group have to be distinguished from pelvic appendicitis, pyosalpinx, and retroversion of the gravid uterus. Pelvic appendicitis is particularly difficult to exclude, as it may give rise to nearly all the signs and symptoms of a small pelvic haematocele. Hypogastric pain, vomiting, local tenderness, slight fever, and tenderness on rectal and vaginal examination are frequently present in both conditions, and in neither case will one expect abdominal wall rigidity. (Zachary Cope.)

In ectopic pregnancy, however, there is nearly always some amenorrhoea or menstrual irregularity, characteristic uterine haemorrhage, the appearance of anaemia, and the initial attack of pain and faintness suggestive of intraperitoneal haemorrhage. In pyosalpinx the characteristic ectopic history will be absent, there will be a longer history of ill health, and some evidence of previous pelvic inflammation. There may be some menstrual irregularity, but rarely amenorrhoea. On vaginal examination the doughy mass in the posterior fornix will be absent.

A retroverted gravid uterus should present no difficulty in diagnosis unless the tubal pregnancy has gone on to the third or fourth month. There will be a history of three or four months' amenorrhoea, with the characteristic appearance of bladder symptoms during the fourth month, and the other signs and symptoms of uterine pregnancy will be well marked. If a catheter be passed and the bladder emptied, the absence of the uterine fundus from its proper position will be noted.

TREATMENT.

The treatment of ectopic pregnancy is surgical, and in my opinion the sooner operation is performed the better for the patient. Expectant treatment is dangerous, as it is impossible to foretell when another and possibly fatal haemorrhage may occur. In a few of the very severe cases where shock is profound and the patient practically

pulseless it may be advisable to improve the general condition before submitting her to the additional strain of a laparotomy, but if this line of treatment is to be followed the patient must be in a hospital or nursing home, and under constant observation, as she may have to be taken to the operating theatre immediately should there be any indication of further haemorrhage.

The particular operation performed will depend on the type of case and the condition of the patient. In serious cases nothing more should be done than is actually required to save the patient's life, and this generally means excision of the affected tube with or without the corresponding ovary. No time need be lost in attempting to clear the peritoneal cavity of all blood clot. When the case is subacute, and the pelvic organs are disorganized or the seat of an old infective lesion, it is quite justifiable to remove both appendages or even the uterus.

Some advocates of conservative surgery have urged that the gravid tube should be saved whenever possible, but this view has not received general support. The danger of another pregnancy occurring in the same tube is probably not a remote one, so most operators prefer to err on the safe side and remove it. A second ectopic gestation not uncommonly occurs in the remaining tube, and there are those who would guard against this accident by always removing both tubes when operating for tubal pregnancy. This is going too far in the other direction, since many of the patients have normal pregnancies subsequently if the non-gravid tube be left intact.

The operations are carried out abdominally, the only exceptions being those rare cases in which a pelvic haematocele has become infected. In such an event the correct line of treatment is to open the posterior fornix and evacuate the infected clot. One of my own patients in whom this operation was performed subsequently became pregnant and was delivered of a healthy child.

The operations performed in my series of cases were as follows:

Unilateral salpingectomy	10 cases.
Unilateral salpingo-oöphorectomy	55 ,,
Double salpingo-oöphorectomy	8 ,,
Subtotal hysterectomy with removal of both appendages	30 ,,
Posterior colpotomy (for infected haematocele)	2 ,,

Results.

The prognosis in cases submitted to operation is good, and the earlier operation is performed the better the results. I know of no disease of parallel severity where the response to prompt surgical treatment is so rapid or so satisfactory. There are, no doubt, many patients who die before surgical treatment is available, but the number of these cases will become smaller as the symptoms and signs antecedent to rupture become more generally recognized. There were no deaths in my series, and this I must attribute to good fortune, though it bears out what I have said about the remarkable powers of recovery which these patients display after operation.

In conclusion, I will add a few words about the question of subsequent pregnancies.

Excluding those operated upon less than six months before the date of my investigation, there were 53 cases where subsequent pregnancy was possible; 14 could not be traced, which reduces the number to 39. Of these 46 per cent. had a subsequent uterine pregnancy, and 13 per cent. a second ectopic pregnancy. In 41 per cent. there was no further pregnancy.

The figures show that the prognosis as regards subsequent uterine pregnancies is fairly good, but that there is a very definite risk of the patient getting a second ectopic pregnancy. As a matter of fact 7 of the 100 patients in my series had two ectopic gestations, and in 5 of them I performed both operations myself. In these 5 cases the non-gravid tube was apparently healthy at the time of the first operation.

Discussion.

Miss MABEL L. RAMSAY (Plymouth) related her experience of a case of undoubted ectopic pregnancy for which no operation was performed. At the necropsy, fifteen years later, there was no sign of pelvic disease.

Dr. LEITH MURRAY (Liverpool) questioned the high incidence of tubal rupture in Dr. Dougal's series. In his own series of 110 cases he had only found 7 cases of undoubted pathological rupture of the tube. He agreed that the great majority of cases were associated with pelvic disease in one form or another, but in quite a number of cases trouble could be traced to the appendix; hence on every occasion when operating for this condition he removed the appendix when reasonably accessible.

Dr. BETHEL SOLOMONS (Dublin) referred to the biochemical tests which had been introduced to aid in the differential diagnosis. Cases of ectopic pregnancy had very frequently to be judged by their general appearance only. In undoubted cases of tubal rupture he was strongly against moving the patient, preferring to operate, if need be, on a cottage table.

Dr. FARQUHAR MURRAY (Newcastle) said that in many cases all the signs were referred to the upper abdomen, so that a diagnosis of ruptured ulcer or biliary trouble might be made. In the early acute stages no blood could be detected in Douglas's pouch by vaginal examination alone, but only by combined rectal and vaginal examination. He thought that many patients were operated upon too hastily; a wonderful improvement often resulted if a short period was given to allow recovery from the shock of being moved.

Mr. FORDYCE (Edinburgh) said that there was one type of case which was apt to be overlooked—namely, rupture into the broad ligament. He had seen this several times, and it was frequently mistaken for the retroflexed gravid uterus, since the symptoms might be the same. He emphasized the need for the very greatest care in examining a case of suspected ectopic pregnancy; rough handling might produce disastrous consequences.

Professor R. J. JOHNSTONE (Belfast) laid stress on the extreme tenderness felt on examination in the posterior fornix, and regarded this as a valuable aid in diagnosis.

Dr. HAIG FERGUSON (Edinburgh) commented on the importance of obtaining an early diagnosis. In his experience the mistake was not infrequently made of diagnosing these cases as ordinary abortions.

Dr. DOUGAL, in reply, said that he might have overestimated the number of tubal ruptures, but he did not think he had. He had had no experience with biochemical tests in distinguishing these cases from those of pelvic infection. He had seen a number of cases where pain had been referred to the upper abdomen. He agreed as to the dangers of rough examination.

COMPOUND COMMINUTED FRACTURE OF TIBIA AND FIBULA INVOLVING THE ANKLE-JOINT TREATED BY THE "BIPP METHOD."

A CASE REPORTED BY MONICA BELL, M.B., B.S.DURH.,
HUMSHAUGH-ON-TYNE,

With Remarks by

RUTHERFORD MORISON, F.R.C.S.,
EMERITUS PROFESSOR OF SURGERY, DURHAM UNIVERSITY SCHOOL OF MEDICINE, NEWCASTLE-ON-TYNE.

A GROOM, aged 30, was admitted to Hexham War Memorial Hospital on June 24th, 1927. Three hours before, while cycling on the road, he was crushed against a wall by a motor car, and the near wheel of the car went over his right leg. He could see that his right foot was turned completely round, and that the bones of the leg were sticking out through his torn clothing, and that there was a large wound. He took hold of his foot by the heel and toes and replaced the bones as well as he could.

CLINICAL NOTE BY DR. MONICA BELL.

Condition on Admission.

He was a thin, fragile-looking man, and was suffering from severe shock. After *x*-ray examination he was taken to the operating theatre, anaesthetized with open ether by Dr. Hurley, and operated upon by Dr. Fairclough.

Two large wounds smeared with dirt and motor oil were seen on the inner and outer sides of the lower third of the leg and ankle-joint. After enlarging these wounds several fragments of the tibia, lying completely detached, were removed, and a considerable tag of soiled, hopelessly lacerated muscle, hanging out of the inner wound, was excised. The upper cartilaginous surface of the astragalus was visible through the widely opened ankle-joint. A few small bleeding vessels were ligatured, the wounds, treated by the bipp method, were sutured by silkworm-gut sutures, and the leg was fixed between two lateral Gooch splints, extending from the tubercle of the tibia above to the sole of the foot below.

After-Progress.

The symptoms of shock soon disappeared after he was put to bed, and his leg felt comfortably free from pain. After the second night pulse and temperature remained normal, he felt well, no discharge appeared through the dressings, and they were left unchanged for ten days. Then the wounds were found to be healed, except where a small tag of muscle had been left projecting from the inner wound, uncovered by skin. The sutures were all removed. The small granulating wound over exposed muscle dried up without showing any sign of infection, and the scab separated in three weeks. From this time his recovery was uninterrupted.

REMARKS BY PROFESSOR RUTHERFORD MORISON.

I saw this patient at the request of Dr. Monica Bell, to whom I am indebted for notes of the case, three months after the accident described. She wished to be advised when it would be safe to allow her patient to begin to walk. He had been getting about on crutches and undergoing massage treatment. There was still some swelling of his ankle, but the fracture result was excellent and the scars sound. Movements of the ankle-joint were limited to about half of the normal, but were steadily improving. He is now doing his work with the help of a calliper, to be used for about three months.

During the war I proved that with the aid of suitable antiseptics infected wounds could be safely closed, and that it was possible to obtain "healing by first intention" in many of them. This was to me a new and surprising discovery, as it was to many of the visitors who came to see our work in the Northumberland War Hospital. It also confirms my belief that the greatest advance in surgery depends upon the discovery of new and more efficient germicides, just as the treatment of syphilis did.

The general practitioner is in danger of losing acquaintance with Lister's principles of wound treatment and their application by the use of antiseptics, because aseptic methods are now used to the exclusion of everything else in all hospitals. With a trained staff and fully equipped service such ideal aims are justified by results, but they never will be in ordinary everyday surgical work, and patients have to pay the penalty for lack of this knowledge of the use of antiseptics.

The *Bipp Method of Treatment of War Wounds*, published by the Oxford Press (price 2s. 6d.), describes fully our practice.* Numerous papers from others as well as by myself have described the remarkable results achieved, of which the case recorded is a good example.

The only explanation I can offer as to why this method has not been adopted universally is that cases of poisoning, occasionally fatal, have followed it. From the first I pointed out the risk of poisoning by absorption of the medicaments, and a few of our early cases developed illness the symptoms of which I fully described. Of my later cases, after we had learned a better technique, none were ill, but an exceptional one showed the blue gum line characteristic of bismuth absorption. Of the hundreds of cases treated in the Northumberland War Hospital by my colleagues and myself none died of bipp poisoning. The only criticism possible is that our directions had not been followed with the necessary care in fatal cases. Few alterations have been made in our method, and the latest directions are:

1. Under an anaesthetic, usually open ether, cover the wound with gauze wrung out of 1 in 20 carbolic acid, and thoroughly clean the skin and the surrounding area with the same lotion. (Preliminary washing, by causing swelling of the epidermic cells, prevents penetration of the carbolic solution, and so does harm.) Drape the surroundings with towels wrung out of 1 in 20 carbolic acid, and soak gloves and instruments in the same.

2. Open the wound freely, and if possible sufficiently to permit of inspection of its cavity. A guide—a finger is the best if the size of the opening permits of it, and, if not, a thick probe—should be introduced to the bottom of the wound, and held there until fully exposed. In doing this special regard must be paid to nerve trunks and muscular branches of nerves, since the division of blood vessels, excepting the largest, and of muscles themselves does little harm as compared with that of the disability following nerve damage. Cleanse the cavity with dry sterile gauze mops, Volkmann's spoon, etc., and remove all dead tissues and foreign bodies.

3. Mop the surrounding skin and the wound cavity with methylated spirit, and dry it.

4. Fill up the wound with bipp, and rub it well in with dry gauze (clean hands and rubber gloves are, of course, understood). Then *remove all excess*, leaving only a thin smear covering over the wounded surfaces. (In bones special care should be taken to remove bipp from all surfaces and crevices, as excess may result in non-union of fractures.) Dress the wound with a strip of gauze wrung out of spirit. Sprinkle the surrounding skin with sterile boric acid powder, and cover all with an absorbent pad. This dressing requires no change for days or weeks if the patient is free from pain or constitutional disturbance. If bloody discharge comes through, the stained part may be soaked in spirit, and a gauze dressing wrung out of the same applied as a further covering, or re-dressing is very easily done. After removal of the old dressing the wound is covered with a dossil of wool soaked in spirit, and any discharge is wiped off the surrounding skin till it is clean. A dressing like the first is then reapplied when necessary.

Bipp should *never* be used as a "salve." Rubbed on cracks, squeezed into sinuses, spread over septic ulcers, it may cause an acute septic "flare-up"—a dangerous and disconcerting result of treatment.

* The mode of preparation of the paste is as follows: Iodoform 16 oz., bismuth subnitrate 8 oz., liquid paraffin 8 fl. oz., or a sufficient quantity. The powders are mixed together in a clean mortar, and the liquid paraffin incorporated. The quantity of liquid paraffin required varies according to the bulk of the powders, the bismuth in particular being liable to a considerable variation in bulk. A sufficient quantity should be added to form a thick paste. It is then advisable to rub down the paste in small quantities at a time, on a slab with a spatula, to ensure freedom from grit and other particles of powder. This paste is not specially sterilized.

GAS IN THE PERITONEAL CAVITY.

BY

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THE peritoneal cavity in the male is a closed sac. Into this cavity there is secreted or excreted normally a small quantity of serous fluid which serves mainly as a lubricant. Gas in the space is an alien. The peritoneal cavity in the female is not closed to the atmosphere, for air can theoretically pass through the vulval outlet into the vaginal passage, up through the cervical canal, the cavity of the body of the uterus, along a Fallopian tube, and so at its fimbriated end into the cavity of the peritoneum.

That it may actually do so may be surmised by the fact that air will enter, by suction, the vaginal space when the female is in the genu-pectoral position and the labia are separated. Further "inspiration" may cause it to travel along the rest of the female genital tract, and reach the peritoneal cavity. If it does it will act as a foreign substance, and may even cause some collapse by its irritating effect upon the sensory nerve fibres in the parietal peritoneum. This is possibly the reason why severe pain is felt when the wall of the uterus is perforated by a sharp instrument in criminal abortion. To put it briefly, the tract along which spermatozoa travel is also open to liquids and gases.

Gastric Gas in the Peritoneal Cavity.

Gastric is the type of gas which is most commonly met with in the peritoneal cavity. Perforation of the stomach wall, or the wall of the duodenum, by the corroding action of an ulcer, is the usual way in which the passage of this gas occurs. Again the entrance of the gas—accompanied, it is true, by irritating fluid—into the cavity is followed by intense pain, so that the patient cannot take a deep breath, and holds the abdominal muscles rigid. The free gas may

pass between the liver and the diaphragm, so that the normal area of liver dullness may be diminished or even lost. It is, however, unjustifiable to wait for this sign before undertaking laparotomy in perforation.

Intestinal Gas in the Peritoneal Cavity.

It is not so common for gas from the intestines to pass into the peritoneal cavity. Occasionally an ulcer, usually a typhoid one, perforates the ileum near the caecum, and again intense agony follows. But little gas escapes when a vermiform appendix perforates, probably owing to the fact that the inflammation has blocked the connexion with the caecal cavity. Here the very irritating fluid contents of the appendicular cavity produce the pain. Perforation of the colon by carcinoma, or of a diverticulum, may allow septic and irritating gas to pass into the peritoneal cavity.

The question whether intestinal gas can pass through the uninjured and non-inflamed wall of the small or large intestine is one of great interest. Enormous distension of the intestines may occur, usually in some form of very chronic intestinal obstruction, and the wall of the bowel becomes so thinned that it would seem as if it must give way, and yet it very rarely does so. In these extreme cases, in the past, an attempt used to be made to evacuate the gas by a fine trocar and cannula, and in some cases with temporary success. When this has been done by a deliberate puncture through the abdominal wall and into the intestine, the door would appear to be opened for infection from the bowel and fatal peritonitis, but this has by no means always followed. Possibly in such cases the intestinal gas is not very septic, and but little of it reaches the actual peritoneal cavity, most passing out through the cannula.

Cases have been recorded in which gas has transuded from the unbroken wall of the intestine into the general peritoneal cavity. The exact manner in which this occurred it is difficult to say. The gas itself appears in these circumstances to be aseptic, and therefore innocuous. The following is a deeply interesting case of this nature.

A lady, now aged 61, had the following history in brief. From the first she had pain at the menstrual periods. At the age of 21 she had a carriage accident. At 25 she was said to have a "tumour" in the abdomen (? intestinal distension). She saw a physician in Harley Street, who advised her not to have any operation, but further advised her not to walk! But she did continue to walk, and did not appear to be the worse for it. It is possible that the exercise helped to expel flatus. From 30 years of age the abdomen had gradually become more distended, and at times remarkably so. While there was some pain, it was never really severe up to 44 years, and vomiting only occurred now and again. About the age of 45 she began to have attacks of great distension with acute pain; she became utterly "unnerved" thereby, and at times had "neurotic" paralysis of limbs.

First Operation: Laparotomy.

In June, 1913, the abdomen was explored by a very competent provincial surgeon, who found much distension of the large intestine, but nothing radical was done. For a while she was distinctly better, pain and distension being less, but a year later she was as bad as ever. Examination by *x* rays at this juncture merely revealed great colon stasis, and left her with a troublesome burn. It was then (in 1916) that I saw her for the first time.

First Ileo-sigmoidostomy.

On June 7th of that year I explored the abdomen, and determined to try the effect of a large ileo-sigmoidostomy. The result of this was perfect for three years, as distension and pain vanished. Then gradually all her old symptoms reappeared.

Second Ileo-sigmoidostomy.

In October, 1920, I saw her again. From examination I came to the conclusion that the ileo-colic anastomosis was faulty in its functioning. She would not hear of another *x*-ray examination, so confirmation by a barium enema was denied us. As the previous operative measures had relieved her so greatly she was very desirous I should attempt something further. I therefore opened the abdomen, found the anastomosis itself perfect, and that by invagination of bowel wall the stoma would admit the tips of three fingers easily. There was, however, considerable distension of small intestine, and of large intestine proximal to the junction between them. After consultation I decided to make another ileo-sigmoidostomy close to the previous one, in the hope that a very free intercommunication would relieve symptoms once more, and perhaps permanently.

Again she was pleased with the immediate result, and left London rejoicing. But on April 30th, 1924, three and a half years after the second anastomosis, I received a letter from Dr. E. M. Knott of Sutton Coldfield to say he had been called in to see her, and she was distended, in pain, and vomited occasionally. Feeling that further operation was negatived I advised temporizing with enemata, pituitrin, etc., and this treatment certainly gave some relief.

Third Laparotomy: Large Catheter Tied In.

She continued with bouts of distension and pain until the beginning of 1927, when her distress became very great, chiefly because the pressure upon the diaphragm caused respiratory and cardiac embarrassment. I was asked by Dr. W. Leslie of Penzance to go down to see her prepared to operate. Accordingly, on February 26th, I reopened the abdomen. There was no free gas in the peritoneal cavity, but the small and large intestines were greatly distended, looking as if ready to burst. In order to make quite sure that one or other of the anastomoses was working I deliberately incised the sigmoid opposite the second junction. This caused a considerable quantity of odourless gas to escape from the lumen of the bowel. The stoma was perfect. I then decided to pass a No. 12 oesophageal catheter (stomach tube) through the anus, up the rectum, into the colon, and through the anastomosis. Considerable difficulty was experienced in manœuvring the tube through the upper part of the rectum, there being apparently at this spot a definite narrowing of the lumen. Eventually the catheter was manipulated the whole distance, and to make sure it should not slip out it was tethered by a silkworm-gut suture to the side of the anus. The incisions in the colon and in the abdominal wall were closed. The wound healed well. Dr. Leslie reported that for four days whilst the tube was *in situ* the distension remained in abeyance, and the patient was much more comfortable. At my suggestion he removed the tube at the end of this time, but she immediately began to distend once more, and experienced considerable pain. In spite of enemata, pituitrin, and strychnine, only partial relief could be obtained. The reintroduction of the tube again brought about a reduction of the distension.

Fourth Laparotomy: Gas in Peritoneal Cavity.

On March 24th she passed a tubular cast of intestinal mucous membrane by the rectum, after having had several loose motions, but distension recurred, and on March 25th it was so great that Dr. Leslie determined to perform colostomy. He opened the abdomen on the left side above my last incision. He writes:

> Imagine my astonishment when, on opening the peritoneal cavity, there was a rush of gas, and the abdomen went down liked a pricked balloon. I only made a small opening, but could by pushing my finger into the abdominal cavity withdraw a loop of small and also of large intestine, which appeared perfectly normal. There was no faecal odour about the escaping gas, and the peritoneal cavity—so far as I saw it—appeared to be perfectly aseptic. I left a small rubber drainage tube passing into the peritoneal cavity and did not make a colostomy.

Dr. Leslie rightly remarks that the case is an extraordinary one. The gas must have come from the bowel, from the lung, or else have been formed in the peritoneal cavity itself. It was odourless, and there was no peritonitis, but this does not negative it being intestinal flatus. There had been no signs or symptoms indicating any pulmonary lesion which could have allowed air to pass from the lung through the diaphragm into the peritoneal cavity. The spontaneous formation of gas in the cavity of the peritoneum is not unknown, but it is only produced by gas-forming organisms, and peritonitis is invariably present. Had the extreme distension of the intestines forced gas through their wall, filtered it on its way, and so allowed the collection of innocuous gas in such considerable quantity as to cause great distension? The distension has been held in check ever since to date (September, 1927)—that is, for more than five months—by allowing the tube to remain as an exit for the gas from the peritoneal cavity.

I have detailed this case fully so that others who have had similar cases may put them on record. To sum up, I consider it to be probably one of congenital megacolon, with osmosis of intestinal gas.

Oxygen in the Peritoneal Cavity.

Warmed aseptic oxygen gas has been introduced into the peritoneal cavity by means of a cannula passed obliquely through the abdominal wall. Introduced slowly and carefully, it does not seem to cause discomfort or to be fraught with danger. A skiagram taken after this inflation gives

very clearly the outlines of the solid abdominal viscera or of an intra-abdominal tumour. It is a method which may be given more trial in expert hands for cases of difficulty in diagnosis—as, for example, in the differentiation of a distended gall bladder from a right-sided mesenteric cyst. The oxygen gas is absorbed within twenty-four hours. It is well known that laparotomy, with or without subsequent drainage, has been of considerable therapeutic service in the serous variety of tuberculous peritonitis. What is the exact reason for the benefit which follows is still a matter of doubt, but some consider that the introduction of atmospheric oxygen may play a part. If this be so, might not the evacuation of a large proportion of fluid in tuberculous ascites and its replacement by pure warm aseptic oxygen have a similar remedial action?

Nitrogen in the Peritoneal Cavity.

The formation of adhesions in the peritoneal cavity, either spontaneously or after laparotomy, is a very real matter, and may have serious consequences. Undoubtedly prophylaxis is of the utmost importance. The introduction of a harmless and not quickly absorbed gas into the peritoneal cavity might have a value in lessening the formation of adhesions. After a prolonged operation in which there has been considerable handling or stripping of peritoneum the whole of the incision might be closed except for a small space through which a fine catheter might be passed into the peritoneal cavity. Nitrogen, purified and warmed, may then be slowly introduced until a moderate distension of the cavity has been obtained, when the catheter should be withdrawn and a suture tied to close the abdomen. Very little if any discomfort results therefrom, even when the patient comes out from the effects of the anaesthetic.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

ACUTE PHOSPHORUS POISONING.

ACUTE phosphorus poisoning is rather rare nowadays, and the following details of a case which came under my care this year may, therefore, merit recording.

A married woman, aged 37, was admitted to hospital on September 7th with a history of having swallowed a teaspoonful of phosphorus mice paste two days previously. Within a quarter of an hour of taking the paste her stomach had been washed out and sulphur administered. The patient was said to have vomited several times after the washing out of the stomach. On admission to hospital she appeared rather nervous, but answered questions quite sensibly. She said she had no pain anywhere, but had belched wind several times. She asked for food, but was only allowed water to drink since it was thought that milk might aid absorption of the phosphorus. There was no ulceration of the lips, tongue, buccal mucous membrane, or throat. The pulse was 80 and of good volume and tension; there was no hepatic enlargement, jaundice, or abdominal tenderness. Next day her physical and mental condition was apparently better, and she was allowed tea and sugar and a piece of dry toast. There was no sign of enlargement of the liver and no jaundice. The pulse remained the same, and she had no pain or sickness; the food was retained. On September 10th she was drowsy, but not comatose. She resisted strongly attempts at palpation and percussion over the lower right costal margin. Slight jaundice of the skin and conjunctivae now appeared, and the liver could be felt by deep palpation under the right costal margin. Albumin and bile were found in the urine, but no leucine or tyrosine. A few granular and cellular casts with occasional polymorphonuclear leucocytes were seen, and the urea percentage was 2. On the next day the patient was troubled with retching, but did not vomit. The jaundice was more pronounced, especially in the conjunctivae, and the lower edge of the liver was felt easily about an inch below the right costal margin. The patient appeared to be tender over this area and became restless on palpation, though she lay quietly and dozed, except when being examined. The tongue was dry and there was sordes of the mouth, but no petechial haemorrhages of the skin were observed. She became comatose and died on the morning of September 12th.

The necropsy report included the following details. There was marked jaundice of the skin and conjunctivae, some petechial haemorrhages were seen on the surfaces of both lungs, and there were fluid effusions (10 oz. and 8½ oz.) into both pleural cavities. The heart was normal in size, but showed some fatty degeneration of the wall, with well marked petechial haemorrhages in the papillary muscles. The pericardium was normal, but the cellular tissue in front of it showed obvious haemorrhages. Petechiae covered the upper surface of the diaphragm, particularly over the left dome. The liver was enlarged and there was evident fatty degeneration. The right lobe extended to the level of the third rib above, and below to about an inch below the right costal margin, and 2½ inches below the ensiform cartilage. The abdominal viscera smelt very strongly of garlic. The spleen, which weighed 6½ oz., was deeply congested, but there was no peritonitis. The left kidney weighed 6½ oz., and there were well marked haemorrhages beneath the capsule and into the lower half of each pyramid; the capsule stripped readily. The right kidney weighed 5¾ oz., and both organs showed fatty degeneration. There was no inflammation of the outer coats of the stomach. This viscus contained a blackish-brown glairy fluid resembling altered blood, which did not smell of phosphorus. Black specks, looking like altered blood, were studded over the inner coat, but these were not firmly adherent to the stomach wall. Haemorrhages were seen on the surface of the pancreas. The uterus was non-gravid and appeared to have undergone some fatty degeneration. Haemorrhages, each about the size of a split pea, studded the mesentery surface. The bladder was distended, but the urine was not luminous in the dark; no naked-eye pathological changes were found in the brain.

I am greatly obliged to Dr. Charles Gordon Lewis, resident medical officer, London Road Hospital, Newcastle, Staffs, for permission to publish particulars of this case.

C. F. SWINTON, M.B., Ch.B.

Newcastle-under-Lyme, Staffs.

ARTHRITIS DUE TO PARATYPHOID B BACILLUS WITHOUT GENERAL SYMPTOMS.

A FEMALE child, aged 14 months, was brought to the out-patient department of the Belfast Hospital for Sick Children, with the following history.

About two weeks earlier the child's mother had noticed a disinclination to move the left leg, and that the knee-joint was swollen. The child had previously been quite healthy, and there was no history of any infectious disease.

On admission the left knee-joint was found to be swollen, and evidently contained a considerable quantity of fluid; it was not acutely inflamed. There were no other abnormal signs on general examination and the temperature was 98.8° F.

On the following day Mr. Hall explored the joint, and a thick glairy exudate was withdrawn. From this fluid, which contained many pus cells, I was able to grow, in pure culture, a Gram-negative, actively motile bacillus. On testing the sugar reactions of this organism I found it to agree exactly with the *Bacillus paratyphosus* B. I then made an agglutinable culture by Dreyer's method, and obtained strong agglutination (up to 1 in 500) with standard *B. paratyphosus* B serum, and no agglutination with *B. paratyphosus* A nor *B. typhosus* serums. The serum of the patient also gave a strongly positive agglutination with standard *B. paratyphosus* B cultures (1 in 500), and no reaction with *B. typhosus* nor *B. paratyphosus* A. There were no general signs of paratyphoid infection. A rash did not appear, nor was the spleen ever palpable, and the stools and urine both failed to show typhoid or paratyphoid organisms on culture.

The girl remained in hospital for eleven days. The temperature was normal throughout her stay, except on two evenings when it rose to 99.6° F.

The patient was taken home, but is now attending the out-patient department, and receiving an autogenous vaccine. There has been a gradual improvement, and at the end of one month's treatment the swelling has subsided and the joint is apparently normal.

I could obtain no history of infection in the family, but several cases of paratyphoid B fever have occurred in the district in which the patient lives.

J. T. LEWIS, B.Sc., M.D., M.R.C.P.Lond.,
Bacteriologist, Belfast Hospital for Sick Children.

SEVERE HAEMORRHAGE FOLLOWING VAGINAL TEAR.

THE following case is sufficiently unusual to merit record. A married woman, aged 28, ceased menstruating about 4 p.m. At midnight, immediately following coitus (the first attempt), she had a severe vaginal haemorrhage, losing about three pints of blood. On my arrival the haemorrhage had ceased, but she was suffering from very severe shock. I found it necessary to give her a subcutaneous infusion of saline, to which she responded well. The following day she was removed to hospital, where a more complete examination was made. A dense central adhesion was found between the anterior and posterior vaginal walls, leaving two small lateral apertures. This was situated about midway between the hymen and the vault of the vagina. A deep tear in the vaginal wall about 1½ inches long extended from the lateral aperture on the right side towards the hymen. The adhesion was broken down and the tear sutured. The patient made a good recovery.

Shanklin, I.W. J. ALFRED GAYNOR, F.R.C.S.I.

British Medical Association.

CLINICAL AND SCIENTIFIC PROCEEDINGS.

SOUTH WALES AND MONMOUTHSHIRE BRANCH.

AT a meeting of the South Wales and Monmouthshire Branch at the Swansea General Hospital, on November 17th, Dr. DANIEL E. EVANS described two cases of renal infantilism.

Renal Infantilism.

The clinical conditions were as follows:

The first patient was a girl aged 12, who, on account of failing health, had attended her school irregularly during the past six months. She now suffered from attacks of vomiting and periodic headaches. She was mentally of the average intelligence, but physically of stunted growth, and thin. Her height was 50½ in. (the average being 57 in.), and her weight was 70 lb. (average 81 lb.). The striking feature of the condition was a marked bending of the long bones of the lower extremity, producing a decided genu valgum. It was ascertained that she had suffered much from unusual thirst and frequency of micturition for several years. The urine was pale; its specific gravity was 1002, and there was a faint trace of albumin present, but no sugar, acetone, pus, nor casts were detected. The analysis of the urine generally indicated a polyuria, due to renal deficiency rather than diabetes insipidus. This child steadily lost ground, and died from uraemia in a few months after examination.

The second patient was a boy aged 13, who had been noticed by his parents not to be thriving. Although his appetite was good he was gradually losing weight, suffering from lassitude, and on account of weakness of the legs could not walk about. His spirits were always good. He was stated to be very thirsty; passed large quantities of urine; would drink a pint to a pint and a half of water during the night; and this polyuria and thirst had been noticed since early childhood. At one period the condition was considered to be tuberculous peritonitis, and he remained under treatment at the St. Bride's Sanatorium for some time. Other children in the family had been strong and healthy, and both parents were normal. The boy was small and thin; his weight was 62 lb. (average 88 lb.), and his height 49 in. (average 58 in.). There was general muscular wasting, and he walked about with difficulty on account of a pronounced condition of knock-knee, which had within the last few months become more marked. The head was rather enlarged, but the heart and lungs were normal. The urine specific gravity was 1000; a definite haze of albumin was present, and tests showed the renal function to be very deficient.

Some six months after this examination Dr. Evans had been asked to see a boy in the hospital who had recently had an operation for mastoiditis, and who presented symptoms which could not be considered as arising from the disease, or a post-operative condition; he recognized the patient as the boy previously described, and did not doubt that the symptoms were those of uraemia, from which the boy died in a few days. At the necropsy the brain was found to be slightly oedematous, with some excess of fluid in the ventricles, but there was no evidence of meningitis. The thymus and thyroid glands were not enlarged, and the heart was found to be normal; an old perisplenitis was observed. Both kidneys were very small, firm, and fibrotic, with multiple small cysts in the cortical zone. Microscopic sections showed that the capsule was thickened, and there was marked interstitial fibrosis, with an area of active inflammation of interstitial tissue. The glomeruli were in varying stages of fibrosis, and the tubules were very dilated in the non-fibrotic areas and lined with cubical epithelium throughout. The small arteries showed an endarteritis. The right suprarenal was normal, but the left was not found.

Dr. Evans stated that the condition was regarded by some as being due to fibrosis of the suprarenal glands. Renal infantilism was characterized by deformities of long bones of the rachitic type, a general rarefaction, characteristic changes along the epiphyseal lines, liability to a deposit of poorly calcified bone under the periosteum, and frequent split fractures, running at right angles to the bone. There was marked retarded physical development, and stunting of growth. These changes were associated with a chronic renal disease, especially in the form of interstitial fibrosis of the kidney, which was possibly the result of some intrauterine nephritis. These cases did not come under observation in the guise of a nephritis of any sort as a rule, but as a bone deformity in association with a remarkable stunting of growth; the child appeared to be only half its true age. Both sexes were equally affected. There was no previous history of rickets or of parenchymatous nephritis, and no evidence of syphilis as a factor. The kidneys were very small. The capsule was thickened, and the surface was only slightly granular. The interstitial tissue was markedly increased, and there were but slight changes in the parenchyma. The small vessels were thickened, but there did not appear to be any other changes in the cardio-vascular system or endocrine organs. The condition probably commenced in infancy. The patient was usually small from birth, but the special symptoms and deficient growth were not noticed until about the age of 6 or later. Thirst and polyuria might be early and marked. The joints were swollen, the knees and wrists being both affected. There was usually no bossing of the skull, and genu valgum developed rapidly in the later stage of the disease. The quantity of urine varied; it may be very large, with a low specific gravity. Albumin was present in a small amount, and occasionally a few hyaline casts were seen. The physical development was markedly interfered with; growth was retarded and the patient was thin. Sexual infantilism occurred in some cases but not all. The intelligence was normal. Life had been prolonged in some cases almost to puberty, but there was risk at any time of uraemia, as could be understood when the extremely small, shrunk, fibrosed kidneys were seen.

Ophthalmic Cases.

Mr. E. K. ROY THOMAS showed a man, aged 24, who had been struck in the left eye by a rivet two days previously, and had sustained a perforating wound, about 4 millimetres long, at the upper and outer corneoscleral margin. Such an accident was very common, especially in industrial districts. No foreign body was discovered within the globe. The patient was admitted to hospital, atropine was instilled, and a padded bandage was applied. There was no ocular vision beyond perception of light. A traumatic cataract was present, with a swelling lens and an anterior synechia. The eye was painful and tender, and Mr. Thomas said that it would require careful watching. If it did not settle down soon, enucleation would be necessary in order to obviate sympathetic infection of the right eye. Search would be made for keratitis punctata, and blood counts be taken; if these showed an excess of mononuclears the eye would be enucleated at once.

Mr. Thomas also showed a case of embolism of a retinal artery in which an operation had been followed by recovery of sight. A man, aged 58, while bending down to tie his bootlace, suddenly lost the sight of his right eye. Two days later he showed the typical signs of embolism of a temporal branch of the retinal artery, and an operation was immediately undertaken. Paracentesis of the cornea, with massage, was performed, and an inhalation of amyl nitrite was given. The vision gradually improved from 6/36 to 6/9, partly with glasses, and then to 6/6 fully with correction. The only defect which had persisted was scotoma corresponding to the small branch which was blocked; this did not interfere to any extent with the vision. Mr. Thomas added that this case emphasized the necessity for immediate attention being given whenever sudden loss of vision occurred.

Orthopaedic Cases.

Mr. W. H. O. WOODS showed three orthopaedic cases:

The first patient was an achondroplasic dwarf, aged 2½. The pathology of the disease was described and the point was emphasized that only bone laid down in cartilage was affected. A demonstration was given how this fact accounted for the deformities.

The second patient was a girl, aged 12, who seven years previously had suffered from attacks of swelling in the right arm, which were accompanied by severe constitutional symptoms, including pyrexia of 101° to 104°, vomiting, and great prostration. During the succeeding six years the attacks recurred, but with decreasing severity. When Mr. Thomas had first seen the child a year ago the arm was slightly swollen, red, and tender, but there was no constitutional disturbance, the attack passing off in the course of a day. An interesting feature was that the arm from the shoulder downwards was of greater size than the other one, the bones being 1¾ inches longer and proportionately larger than the left. The hand also shared in the hypertrophy, the whole limb resembling that of a girl aged 20. Mr. Woods was unable to give a diagnosis, but suggested that the condition had resulted from a local vasomotor disturbance.

A series of plaster casts was exhibited to demonstrate the results of manipulation in a very severe case of congenital talipes equino-varus. The last cast showed that the feet were now in the normal position. The nature of the deformity was demonstrated and the system adopted in its methodical correction. Importance was attached to the fact that the reduction of the deformity was only the first step towards cure; relapse was inevitable unless the treatment was continued until the child was able to walk, and complete muscular balance had been established.

Clinical Cases.

Mr. C. L. ISAAC showed four patients.

The first was a thin and pale man, aged 57, who had had a history of stomach trouble for the previous eighteen months, with pain which came on an hour after food. It was situated in the epigastrium, radiating round to the left side between the shoulders, and was relieved by food. There was occasional vomiting, but no haematemesis. The appetite was poor and the bowels regular. A mobile mass was palpable just above the umbilicus, and an *x*-ray examination showed a deformity of the pylorus in this region, with only slight delay in emptying. A fractional test meal indicated the presence of active secretion and normal neutralization, which was compatible with an ulcer within the stomach. A partial gastrectomy was performed and a large mass was removed from the anterior surface of the lesser curvature of the stomach, one and a half inches from the pylorus.

The second patient was a boy, aged 17, who had haematuria, with no other symptoms, and no previous illness. The patient was undeveloped, but there were no physical signs of disease in any organ. The urine contained a large number of blood cells, leucocytes, and tubercle bacilli; a culture was sterile. A renal efficiency test showed blood urea 37 mg. per cent.; urine urea, 1.85 grams; and the haemorenal index 1 : 50. No *x*-ray evidence of calculi in the urinary tract was obtained and the bladder was normal, apart from a red patch round the left ureteric orifice; methylene blue came through the right, but not the left, ureter. Nephrectomy of the left kidney was performed and the specimen was exhibited.

A woman, aged 47, had had stomach trouble for four years; *x*-ray examination showed hour-glass contraction to be present, with a penetrating ulcer at the lesser curvature in the cardiac portion. A fractional test meal showed that the gastric secretion was hyperactive; neutralization was delayed, there was hyperacidity, and evidence of pyloric delay, probably due to spasm. The analysis was characteristic of duodenal ulcer, but an operation brought to light a gastric ulcer, together with hour-glass contraction. Partial gastrectomy was performed and the jejunum was anastomosed to the stomach. The ulcer was found to be of the benign type, with much fibrosis in the muscle layers, and an inflammatory reaction in a small adjacent lymphatic gland; no evidence of malignancy was obtained.

The fourth patient was a man, aged 50, with a history of absolute obstruction of four days' duration, with vomiting, gastric pain shortly after food, and constipation for four months. He had lost weight during the last few months, but there was no blood in the stools. Laparotomy was performed and the small intestine was found to be distended, with free fluid in the abdomen. An irreducible ileo-colic intussusception was discovered and a thickened caecum. The tumour was excised, the opening in the ascending colon was closed, and the end of the ileum was united with the transverse colon. Section of the tumour showed it to be an adeno-carcinoma with a marked inflammatory reaction and congestion. After six years the patient was still alive, well, and at work.

Dr. IWAN DAVIES exhibited skiagrams illustrating bilateral renal calculus; an organic hour-glass stomach, with a penetrating ulcer on the lesser curvature; an ulcer of the posterior wall of the body of the stomach; a seven months' foetus in utero, with extended breech presentation; two cases of tuberculosis of the spine, involving respectively the first, second, and third lumbar vertebrae; fracture of pelvic rami, showing union in good position; fracture of the neck of the femur; and loose bodies in the knee-joint.

STAFFORDSHIRE BRANCH.

A GENERAL meeting of the Staffordshire Branch was held at the North Staffordshire Royal Infirmary, Stoke-on-Trent, on November 24th.

Injuries to the Eye.

Mr. R. H. DICKSON read a paper entitled "Injuries to the eye in their medico-legal aspects." He specified the occupations in which injury to the eye was liable to occur, and dealt with the types of trauma most commonly met with. He discussed the pathology and the appropriate treatment of the particular types of case coming within the category of the paper, and considered in detail important points relating to sympathetic ophthalmia. The bearing of medical evidence on claims relating to compensation was fully explained, and the present state of court procedure in such cases was described and illustrated by examples. Mr. Dickson put in a plea for the modification of the present procedure by the transference of judicial function, so far as the hearing of medical evidence was concerned, to a board of medical assessors, who would be much better able to sift medical evidence than a judge, no matter how clear-minded and erudite he might be.

Suppurative Teno-synovitis.

Mr. ERIC YOUNG, in a communication on "Suppurative teno-synovitis of the palm," described in detail the anatomy of the flexor tendon sheaths and of the various cellular spaces of the hand which were liable to suppuration. He next considered the diagnosis of the presence of pus in different situations, and indicated the best lines for operative intervention. He showed the exact sites which should be selected in making incisions, and particularly emphasized the point that in involvement of the common flexor tendon sheath proximal to the transverse carpal ligament the main mass of pus was invariably behind the tendons, lying between them and the pronator quadratus. He added that a collection of pus in this situation should not be incised from the front through the tendons; the approach should be made from the side in the plane of the potential space between the tendons and the pronator quadratus.

Endoscopy.

Mr. G. A. CARTER described some uses of endoscopy, and showed a large number of instruments for the examination of the air passages and oesophagus. He discussed the symptomatology and pathology of conditions causing difficulty in swallowing, and recounted a variety of cases which had come within his personal experience. He mentioned foreign bodies impacted at different points in the air passages and gullet, and demonstrated methods for their removal, together with a large number of specimens which he had extracted from different sites.

Heart-block.

Dr. A. WILSON GILL read a paper entitled "Auriculo-ventricular bundle branch block and its diagnosis by the electro-cardiogram." Dr. Gill explained the anatomy and physiology of the nodal and auriculo-ventricular bundle system of the heart, and described the waves seen in cardiographic tracings of the normal heart. He then discussed the pathology and symptomatology of bundle branch block, and demonstrated cardiograms of the condition. He showed that in this disease there was a definite and pathognomonic derangement of the Q R S complex; the Q S time interval was increased, there were secondary oscillations on the upstroke and downstroke of the wave, and the point of the wave frequently exhibited a notch or bifurcation.

Reports of Societies.

LATE RESULTS OF OPERATION FOR CARCINOMA OF THE BREAST.

REPORT BY A COMMITTEE OF THE MEDICAL SOCIETY OF LONDON.

AT the meeting of the Medical Society of London on November 28th, Mr. HERBERT W. CARSON in the chair, the report of a committee appointed to investigate the after-results of operations for cancer of the breast was presented and discussed. The committee, which was appointed in July, 1923, consisted of Sir James Berry, Mr. Warren Low, Mr. Percy Sargent, Mr. Herbert Carson, and Mr. T. P. Legg. The discussion of the report is printed at page 1085.

A STUDY OF 265 PATIENTS ALIVE AT LEAST TEN YEARS AFTER OPERATION.

The scope of the inquiry was limited to the tracing and investigation of patients for whom the primary operation was performed not less than ten years previously, and an inquiry form, sent to Fellows of the Medical Society and to surgeons attached to various hospitals in the British Isles, elicited 320 replies; 265 of these were accepted as coming within the scope of the inquiry, and form the basis of the report. The reasons for selecting patients who survived more than ten years after operation were: (1) To establish a time period after which recurrence was likely to be infrequent; (2) to give a broader survey to the question of permanent freedom from recurrence; (3) to adopt a more satisfactory time period than the three- and five-year periods hitherto adopted in statistical investigations. The committee considered the three-year period too short, while the five-year period appeared to be that in which recurrences were most likely to occur. On the other hand, fifteen years appeared to be too long, because most patients, towards the end of that period, would have reached an age when there is a high mortality from causes other than cancer of the breast and its metastases. (4) Finally, the committee sought to determine any common factors which might account for long survival.

The data collected have been analysed and tabulated by Mr. W. E. Tanner.

Sex.—All the patients were females, with the exception of three, the incidence of cancer of the breast in males being about 1 per cent. The evidence does not support the theory that the prognosis is worse in males; the three were alive and free from recurrence after eleven, fifteen, and eighteen years respectively.

Married or Single at Date of Operation.—The percentage of single women is slightly higher than that given in the literature, and the evidence shows that the prognosis is slightly better in the single than the married. The figures are: married (2 males) 60.4 per cent.; single 28.3 per cent.; widows 7.1 per cent.; not stated (1 male) 4.1 per cent.

Age at Time of Operation.—The prognosis in young patients is shown to be not so bad as is generally supposed, while the decennium 40 to 50 furnishes the best prognosis. A considerable drop in the percentage of survivals occurs after 50 years of age, but, allowing for the normal expectancy of life after 60, the prognosis of cancer of the breast would appear to be good. The percentages of survivals for different ages at the time of operation are as follows: 21-30 years, 1.5 per cent.; 31-40, 14.7 per cent.; 41-50, 44.1 per cent.; 51-60, 23.8 per cent.; 61-70, 9.4 per cent.; 71-80, 2.3 per cent.; not stated, 4.1 per cent.

Children before Operation, and Breast-fed Children.—There were 158 married women and 19 widows, making a total of 177. Of these, 32 were childless; none of the single women had borne children. The number of children and the method of feeding were not stated in 45 cases. Of the remaining parous women, in 61 the children were breast-fed; in 25 it is not known whether the children were or were not suckled; in 14 the children were not breast-fed. In 3 women it is definitely stated that the affected breast was not used for suckling. In 4 cases lactation abscess developed in the breast subsequently affected with carcinoma. There were 7 cases of septic mastitis in breasts which were affected later with carcinoma. In one of these it was noted that the carcinoma developed twenty years later in the indurated area around an incision scar. No instance of carcinoma arising in an actively lactating breast occurs in the series.

Breast Affected, and Position of Growth in Breast.—In 48.3 per cent. the growth was in the right breast, in 49.1 in the left, and in 2.6 the side is not stated. There is thus no evidence that the side affected has any influence on the prognosis. With regard to the position of the growth in the breast the report gives tables showing the number of cases in which, respectively, the whole breast, all four quadrants, the individual quadrants, the nipple, and the axilla were primarily affected; and the right and left breasts are separately considered. A separate table shows the results when the two breasts are considered together. The upper half of the breast was involved in 32.6 per cent., the lower half in 16.5 per cent., the outer half in 32.3 per cent., the inner half in 10.5 per cent., and the central part in 8.1 per cent. In four cases the greater part of the breast was affected, and in two no tumour was found in the breast, but secondary deposits were present in the axillary glands.

Operations after merely Naked-eye Diagnosis.

Of 23 patients on whom the radical operation was performed 19 were alive and well for periods varying from ten to twenty-three years after the primary operation. One was alive with intrathoracic growth eighteen years after operation, but without local recurrence. Two died from local recurrence fifteen and twelve years respectively after the primary operation; one died with recurrence in the supraclavicular glands secondary to a recurrence in the pleura, ten years after the primary operation. Among the patients in this group two had enlarged axillary glands and both were alive and well seventeen and thirteen years respectively after the radical operation. In one patient radium was applied to a recurrent nodule one year after operation; the nodule disappeared and the patient was well twelve years after the primary operation. In one case a recurrent nodule in the skin over the lumbar spine was excised three years after the primary operation, and the patient was well thirteen years after the primary operation. Of two patients whose axillary glands were infected at the time of the primary operation, one was alive and well thirteen years later; the other had a portion of the fourth costal cartilage and part of the pericardium excised seven years after the primary operation, and the patient died from local recurrence twelve years after the primary operation. In one patient the supraclavicular glands were excised one year after the primary operation, and the patient was alive and well eighteen years after the original operation.

In a second group of nine cases in which the diagnosis was made on naked-eye appearances alone the primary operation was "incomplete." In two cases of local excision of the tumour there was in one case a massive recurrence in the breast, and the axillary and supraclavicular glands were enlarged. A radical operation with excision of the supraclavicular glands was performed, and the patient was well, with no signs of recurrence, sixteen years after the primary operation. In the other case a radical operation was done one year after the primary operation; the patient was alive twelve years after the first operation, with recurrence in the scar and secondary deposits in the spine. In a patient in whom the axillary glands were enlarged the breast, pectoral and axillary fasciae, and axillary glands were excised, and she was well, with no signs of recurrence, sixteen years later; and in a similar case, but without enlargement of the glands, the patient was well twenty-three years afterwards. In three patients the breast and axillary glands were excised; one was alive with recurrence in the scar fourteen years after the operation; in the second recurrent nodules in the scar were treated with *x* rays three years later, the nodules disappeared, and the patient was well, with no signs of recurrence, ten years after the primary operation; in the third a nodule in the scar was excised two years after the primary operation, and the patient was alive and well fourteen years after. In three patients the breast only was excised, and subsequently each had operations for local recurrent nodules. In one the axilla was cleared two years after the primary operation, and two other operations were done for local recurrences in the scar four and seven years later—she was well and without recurrence eleven years after the primary operation; in the second case three operations for local removal of recurrent nodules were performed, and the patient died with recurrence eleven years after the primary operation; the third patient had two or three operations for local recurrences in the first two years after the primary operation, and one for recurrence in the pectoralis major fifteen years later, when *x*-ray treatment was instituted, the patient dying thirty-two years after the primary operation, from peritonitis.

Operations after Alleged Microscopical Diagnosis.

In 19 cases the diagnosis is stated to have been made by the microscopical appearances, but these were not described in detail, and no macroscopical appearances of the tumours were given. A radical operation was done in 8 cases: in one the supraclavicular glands were excised for recurrence ten years after the operation, and the patient died twelve months later from recurrence; in another the opposite breast was removed for carcinoma six months later. Seven patients were well, with no signs of recurrence, ten to eighteen years after the primary operation. In 5 cases the operation was performed in stages: in one the radical operation was done soon after the excision of the axillary glands, the patient being well, with no signs of recurrence, ten years after the primary operation; in four others a local excision of the tumour was followed by a radical operation at intervals varying from five days to two months, 2 of the patients being well, with no signs of recurrence, ten years after the primary operation, and 2 twelve years after. In one case a supposed adenoma and, a year later, local nodules of carcinoma were excised, followed by a radical operation, the patient being well, with no signs of recurrence, nineteen years after the primary operation. In 3 patients the breast only was excised: in one there were operations for local recurrences eight and fifteen years after the primary operation, the patient dying from cancer shortly after the last operation; in another a local recurrence was excised, and the supraclavicular glands removed, six years after the primary operation, the patient being well and free from recurrence twenty-one years after the primary operation; in the third a dissection of the glands of the neck on the same side, with removal of a cancerous gland under the mastoid, was made nine months after the primary operation, followed

by excision of the axillary glands eleven years after the operation, the patient being alive, with local recurrences, twelve years after the primary operation.

OPERATIONS AFTER DEFINITE MACROSCOPICAL AND MICROSCOPICAL DIAGNOSES.

Histological Types.

In 212 patients the diagnosis was confirmed both macroscopically and microscopically. In 45 of these the tumour is described as a spheroidal-cell carcinoma with much fibrous tissue (*scirrhous carcinoma*). A radical operation was performed in 40 of these, and 31 were alive and well, and free from recurrence, ten to twenty years after the primary operation; 4 died from causes other than recurrence, with no sign of cancer; one was alive, with recurrence in the supraclavicular region, ten years after the primary operation; 4 died from recurrence. In one patient the breast, fascia, and superficial fibres of the pectoralis major were removed and the axilla was not touched; this patient died of recurrence in the chest wall eighteen years after the primary operation. In another the breast, fascia, superficial fibres of the pectoralis major, and the axillary glands were removed, and the patient was alive and free from recurrence twenty-seven years after the primary operation. In two patients the breast, pectoral, and axillary fasciae and glands were excised; they were alive and free from recurrence ten and twenty years respectively after the primary operation. An incomplete primary operation in two cases was followed by death with recurrence in eleven and fourteen years respectively.

In 26 patients the tumour is described as a *spheroidal-cell carcinoma*. A radical operation was done in 21 of these, of whom 19 were well and free from recurrence for ten to sixteen years after the primary operation. One died from heart disease at the age of 64, sixteen years after the primary operation; another was alive with supraclavicular recurrence ten years after the primary operation. In 5 patients the breast, fascia, and axillary glands were excised at the primary operation; all of these were alive and free from recurrence from eleven to nineteen years after the operation.

In 4 cases the growth is described as an *adeno-carcinoma* (a variety of spheroidal-cell carcinoma). A radical operation was done in all, and they were alive and free from recurrence eleven, fourteen, fourteen, and fifteen years after operation.

In 11 cases the growth is described as *encephaloid*. In all a radical operation was performed, and all were alive and free from recurrence ten to twenty-three years after the primary operation.

There were 12 cases of *duct carcinoma*. A radical operation was done in 11 of these, all of whom were alive from eleven to sixteen years after operation, and free from recurrence. In one case local excision with a little of the surrounding breast tissue was done, and the patient was alive and free from recurrence fifteen years later.

In 4 cases the growth exhibited *mucoid* change. A radical operation was performed in all; 3 were alive and free from recurrence eleven, fourteen, and seventeen years respectively after the primary operation; one was alive twelve years after operation, with local recurrence.

One patient had an *atypical* growth, with precancerous changes in the ducts and malignant secondary glands. A radical operation was performed and, six years later, Wertheim's operation for carcinoma of the cervix; the patient was alive, with no signs of cancer, ten years after the primary operation.

SCOPE OF OPERATION AS REGARDS BREAST, MUSCLES, AND GLANDS.

Local Excision of Tumour at Primary Operation.—Of the 15 cases in which this operation was performed 14 had a radical operation within a few days or months of the local excision. The patient in whom no second operation was performed (a case of duct carcinoma) was well and free from recurrence fifteen years after operation. Of the remaining cases, 13 were well for periods of ten to thirty-four years after the primary operation; two of these were operated on for carcinoma of the other breast. One case was alive with recurrence in the scar and secondary deposits in the spine twelve years after the primary operation.

Breast only Excised at Primary Operation.—This operation was done in 12 cases. In two nothing further was done; one of these was alive and free from recurrence twenty-four years later, and had had a colostomy for carcinoma of the rectum performed twenty years after the breast operation; the other died twenty-five years after operation with extensive local and glandular recurrence. The remaining ten patients had secondary operations, varying in scope: 5 of these were well, with no signs of recurrence, 3 eleven years, one twenty-one years, and one twenty-six years after the primary operation; one was alive, with recurrence in the axillary glands, fourteen years after the primary operation; 3 died from recurrence eleven, twelve, and thirteen years after the primary operation; one died of peritonitis, with no sign of recurrence, thirty-two years after the primary operation.

Axillary Glands Excised at Primary Operation.—In two patients no growth was found in the breast. The axillary glands were enlarged, removed, and found to contain carcinoma. A radical operation was done a few days later, and the patients were alive and well eleven and ten years later.

Breast and Axillary Glands Removed.—In 7 of the 14 patients there was no subsequent operation; 3 of them were well and free from recurrence twenty-one, eleven, and twenty years later; 2 were alive, with local recurrence, twelve and fourteen years later; 2 died from recurrence eleven and fourteen years later. Seven other patients had subsequent operations—one for carcinoma of the other breast, 5 for local recurrent nodules, and one for recurrence in the supraclavicular glands. Three were well twelve, ten, and fourteen years after the primary operation; one was alive with recurrence in the supraclavicular glands fourteen years after, and 3 died of recurrence fourteen, twenty-four, and fourteen years after the primary operation.

Breast, Pectoral and Axillary Glands and Fasciae Excised.—There were 21 patients. In 15 no subsequent operations were performed; 14 of these were well, with no signs of recurrence, ten to twenty-three years after operation; one died, free from recurrence, of old age (80); one had keloid scars removed and was well after eighteen years; one had an operation for carcinoma of the other breast, and was well ten years after the primary operation. Four patients had secondary operations for recurrence; one was well sixteen years after the primary operation; two were alive, with recurrence, twenty-four and twelve years after; one died from bronchitis twenty years after the primary operation.

Breast, Fascia, Part of Pectoralis Major, but no Glands, Excised.—One patient; two operations for recurrence; death from recurrence in chest wall eighteen years after the primary operation.

Breast, Fascia, Pectoralis Major, and Axillary Glands Removed.—There were 44 cases. Of these 34 were alive and well ten to twenty-three years after operation; 3 were alive, with recurrence, ten, eighteen, and eleven years after operation; 2 died ten and nineteen years after operation, with no signs of recurrence; 5 died, with recurrence, ten to eighteen years after operation. There was a secondary operation for recurrence in 7 patients, and in one the other breast was removed for carcinoma.

Breast, Fascia, Pectoralis Major, Pectoralis Minor (Divided or Removed), and Axillary Glands Excised.—There were 135 cases, of whom 121 were alive and well ten to twenty-two years after operation; 4 were alive, with recurrence, ten to twelve years after operation; 5 died of recurrence ten to eighteen years after operation; and 5 died from causes other than cancer, and with no signs of recurrence, eleven to sixteen years after operation.

Pectoralis Major, Fascia, Axillary, and Supraclavicular Glands Removed.—There were 11 cases, in none of which were the supraclavicular glands infiltrated with cancer. In none were there secondary operations for recurrence, but one patient had colostomy performed for carcinoma of the pelvic colon. Ten were alive with no signs of recurrence eleven to fourteen years after the primary operation. One was alive with metastases in the liver and peritoneum thirteen years after operation.

The report next deals with the method of closure of the operation wound, the after-progress immediately following the operation, and the subsequent operations which became necessary. In nearly 25 per cent. of the total number of patients one or more operations were necessary in addition to the primary operation. Details of these are tabulated, under the headings of (1) Recurrence in skin or parts adjacent to operation area; (2) Recurrence in glands of the same side as the breast operated on; (3) Recurrence in the pleura; (4) Recurrence in the skin over the lumbar spine; and (5) Supposed recurrences, proved not to be malignant on microscopic examination.

Carcinoma in the Opposite Breast.

In 13 patients carcinoma developed in the opposite breast. The growths do not appear to have been recurrences, except possibly in 3 patients, in each of whom operations had been done for local recurrences on the side of the primary operation. In most cases a number of years elapsed between the operations on the two breasts. Of the 13 patients, 3 died—one from bronchitis twenty years after the primary operation and six years after the removal of a malignant ovarian tumour. The other 2 died from recurrence twelve and thirteen years respectively after the primary operation, the other breast having been removed two years before death. Nine patients were alive, with no signs of recurrence, one to five years after the operation on the second breast, and one patient lived for thirteen years.

Very little information was gained with regard to treatment by *x* rays and radium. *X* rays were employed in 44 cases and radium in 8, full details of which are given in the tables. Several tables deal with the subject of glandular infiltration and its effect on prognosis after operation.

Summary of Late Results of Operation.

Of the 265 patients 73.6 per cent. were alive and well, with no signs of recurrence, at intervals of ten to thirty-four years after the primary operation; 3.8 per cent. were alive and well at intervals of ten to twenty-six years after the primary operation, but had undergone an operation for carcinoma of the other breast—in one of these more than ten years had elapsed since the second operation, in the other 9 the interval was less; 1.5 per cent. had operations for carcinoma in other parts of the body; 3.8 per cent. were alive and well at periods of ten to twenty-one years after the primary operation, but had had one or more operations for recurrence; 7.9 per cent. died with recurrence more than ten years after the primary operation, at intervals of ten to twenty-five years; 3.8 per cent. died more than ten years after operation at intervals of ten to thirty-two years without signs of recurrence.

Of the patients who were alive more than ten years after the primary operation, recurrence appeared in 46 (17.35 per cent.). These cases fall into two groups: (1) Ten were alive, with no signs of cancer, but had had an operation for recurrences which were, with one exception, all local, and occurred one to six (in one case fourteen) years after the primary operation. (2) Fifteen were alive with signs of recurrence, and 21 died of recurrence more than ten years after the primary operation. Taking the two groups together, the recurrences were local in 25 patients; in 17 of these they appeared within ten years; in 6, between ten and fifteen years; and in 2, between twenty and twenty-five years. The critical times after operation would appear to be the first three years (13 patients—28 per cent.—had recurrences in these years); between nine and ten years (when there were 10 cases of recurrence—22 per cent.); and again between ten and fourteen years, when recurrence occurred in 11 patients—24 per cent.

Present Position.

Of the 265 cases dealt with in the report 195 patients are alive and well with no signs of recurrence (after ten years, 21 patients; after eleven, 38; after twelve, 22; after thirteen, 26; after fourteen, 22; after fifteen, 18; after sixteen, 9; after seventeen, 11; after eighteen, 8; after nineteen, 4; after twenty, 7; after twenty-one, 2; after twenty-two, 2; after twenty-three, 3; after twenty-seven, 1; and after thirty-four, 1).

Ten patients are alive and well, but within the last ten years have had an operation on the other breast for carcinoma.

Four patients are alive, but have had an operation for carcinoma in some other organ.

Ten patients are alive and well, but have had an operation for local recurrence.

Fifteen patients are alive, but with local recurrence.

Twenty-one patients died with recurrence more than ten years after the primary operation.

Ten patients died more than ten years after the primary operation from causes other than carcinoma, and with no signs of recurrence.

Discussion.

Mr. T. P. Legg, a member of the committee, after summarizing the conclusions of the report, dealt with two general criticisms. One was that it was not known of how many patients the 265 accepted cases which formed the basis of the report were the survivors. On the criterion of some figures supplied from their own practices by Mr. Grey Turner and Mr. Hey Groves, it would appear that these 265 might be said to be the survivors of between 1,900 and 2,500 individuals. The second criticism was that, the information being supplied by a large number of surgeons, there was great diversity in terminology and in other more important respects; this was certainly a weakness of the statistical method. Very little information was to be gained from the report as to the use of *x* rays and radium, and a number of questions as to the value of radiation methods awaited an answer. In one respect the report was disappointing. It had been hoped that some common factor might be found which would account for long survival. That hope had not been realized.

Mr. Herbert Carson said that it was a matter of great regret to the committee that no common factor which made for long freedom from recurrence was apparent. Although it was impossible to give a term to the chance of recurrence in cases of cancer of the breast success had attended the treatment of local recurrences.

Mr. W. E. Miles, speaking from an experience of treatment of cancer of the breast extending back for twenty-eight years, emphasized the need of keeping in view not merely extrathoracic, but also intrathoracic spread, and the possibility, after extensive operation of the breast, of metastases in the supraclavicular glands. For the purposes of more complete removal of the affected supraclavicular glands he had removed the clavicle, thereby obtaining an excellent exposure. He regarded the surgical treatment of cancer of the breast as largely fortuitous; if the operation had included the whole of the tissues which had been invaded by the extension of cancer cells from the primary focus then it was a success, but if the cancer cells had passed beyond the scope of the operation into the thorax it was a different matter. He had never seen at the Cancer Hospital a case of cancer of the breast cured by *x* rays. For a time, after breast excision, he had sent cases for exposure to *x* rays with the idea that any isolated cancer cells might thereby be destroyed, but he had never seen such early, rapid, and widespread recurrences as in the cases so dealt with; the whole area exposed to *x* rays seemed afterwards full of minute metastases.

Mr. W. Sampson Handley said that an unreasoning pessimism on the part of the public was one of the difficulties of the surgeon. Patients with a lump in the breast had an idea that if it was not cancer there was no hurry, and if it was cancer there was no hope. Among his own private patients the average time which elapsed between the patient first noticing something wrong and coming for advice was nearly six months. The usefulness of a statistical inquiry in such a complex matter as breast cancer was limited. His own view was that detailed study of a few individual cases was likely to be more fruitful than cursory study of a large number. There was a general tendency to despair of a case if recurrence followed the first operation, and the present report would serve as a corrective. The discrepancy between the descriptions quoted in the

report seemed to point to the necessity of obtaining a standard collection of histological specimens, and also of encouraging a supply of competent histologists by providing appointments which would permit able men to devote their whole career to histology.

Mr. T. P. WALTON said that since 1919 he had had at his disposal a very satisfactory follow-up department, and on dividing his cases into two groups, those before and those after the institution of this department, some interesting comparisons were made possible. The number of lost cases, which figured largely in the earlier returns, was greatly diminished as a consequence of the follow-up system. In a group of 93 cases operated on, it appeared that 17 had had recurrences within less than one year, 12 in from one to two years, 9 in from two to three years, and 2 in from three to four years; the greatest number of recurrences were found before the end of the second year. Of the other patients, 40 were well, one had died from another cause, and three were untraced; *x*-ray treatment had proved of great value in cases of recurrences.

Mr. JOCELYN SWAN gave figures obtained from an inquiry at the Cancer Hospital in 1924 as to the cases which had been treated during the period 1904-14. Of 562 operated on, 433 were known to be dead, 45 were alive and well at the time of the inquiry, and 84 were untraceable. The analysis of the figures bore out the point that the earlier a case was obtained the better were the chances of a good result. He agreed with Mr. Miles as to the ineffectiveness of *x* rays. He had never seen a case of cancer of the breast cured by *x* rays, though he had seen several cases of simple subcutaneous recurrence clear up.

Dr. S. WYARD took exception to one statement in the report, because, although it expressed what was literally true, it left an inference which he believed to be negatived by the facts. It was stated that "Looking at this table [a table giving the number and date of recurrences in 46 patients] a striking feature is the small number—4 patients (8.6 per cent.)—with recurrence after fourteen years." The inference was that the longer the patient lived after operation the less was the likelihood of recurrence. This, he believed, could not be sustained.

Mr. DUNCAN FITZWILLIAMS said that a considerable number of patients mentioned in the report had a local operation, and then, at a later stage, perhaps two years afterwards, a radical operation; if the condition was not generalized then a local operation would cure it. He was thinking of those breasts in which an operation was performed for some suspicious symptom, and carcinoma was found afterwards, not the cases of manifest malignancy. There were such cases in which a local operation was sufficient. He had not found *x* rays very effective, but he had a great respect for radium, which rendered inoperable cases not only operable, but so nearly normal that he had sometimes refused to operate. Radium, however, had the most deleterious effect when associated with the operation, for it delayed healing and sometimes caused a burn.

Mr. WARREN LOW said that the committee, of which he was a member, chose the period of ten years, because it was felt that there would be little use in taking a shorter period. One of the impressive things brought out in the report was the large number of survivals, many of them free from recurrence, ten years after operation. It was evident that if surgery could not cure these cases it could delay the ultimate end for a number of years.

Mr. ZACHARY COPE raised the question as to what was the natural history of cancer. How many patients survived without operation at all? It seemed that cancer might be either long-lived or short-lived; some cases lasted for years, in others the spread was so quick that the patients died in a year or less. Cancer lay dormant over such extraordinarily long periods that it seemed doubtful whether it could ever be said to be cured.

Mr. DONALD ARMOUR, speaking with regard to *x*-ray treatment, said that the West London Hospital was the first to apply the Erlangen treatment to carcinoma of the breast, but no cases could be written off as either cured or improved by that method. With regard to the mode of spread, there was no doubt in his mind that in many cases in which the supraclavicular glands had become infected, the infection was not from the axillary glands but from the intrathoracic glands.

Mr. W. E. TANNER, who had analysed and tabulated the results, replied briefly to appreciative remarks by Mr. LEGG and Mr. CARSON.

DIAGNOSIS OF SURGICAL DISEASES OF THE KIDNEY.

AT a meeting of the Royal Medico-Chirurgical Society of Glasgow, on November 18th, the president, Dr. JOHN COWAN, in the chair, Mr. ROY YOUNG opened a discussion on modern views regarding the diagnosis of surgical diseases of the kidney.

Mr. Young described the routine examination of a patient with suspected urinary trouble. This comprised a complete report of the history of the illness; thorough examination of the patient, including the blood pressure; chemical, microscopic, and bacteriological tests of the urine, and a record of the amount passed in twenty-four hours; radiological examination of the urinary tract; and an estimation of the total renal efficiency, which in some cases could be omitted. At the first cystoscopy the whole bladder was examined with special reference to the appearance of the ureter orifices and the rate and character of the efflux from them; the colour test was also performed. A second examination might be necessary, with catheterization of the ureters, in order to collect the separate urines, for location of stone, or for pyelography. The obvious drawback to such an examination was that it involved expenditure of time and money. Mr. Young thought that the examination should stop at the point where it was concluded that an accurate diagnosis had been made. This might occur early in the examination or not until the final pyelograph. He illustrated the necessity of a complete examination of the whole urinary tract by the case of a man who had been under treatment for a considerable time for nephritis, since albumin had been found in his urine. No benefit followed, and then a bacteriological examination of the urine revealed the presence of coliform bacilli. He was treated with a vaccine and, after a time, seemed to be cured. He went away for a holiday, but on the second day he had to be admitted to hospital, where a large phosphatic calculus was removed from the bladder. On his return to Glasgow, since he appeared to be no better, he came into the Western Infirmary, where Mr. Young removed a very large calculus, together with a functionless pyonephrotic right kidney.

Mr. ARTHUR H. JACOBS confined his remarks to the diagnosis of renal infection—the commonest of all surgical diseases of the kidney. In pyelitis this was confined to the renal pelvis and calyces; in pyelonephritis the parenchyma, or kidney proper, was also involved; while in a pyonephrosis there was gross distraction of the kidney substance, which might result in the organ being converted into a mere bag of pus. The symptoms of renal infections might be exhibited in a fulminating, acute, or chronic form, but in all types the urine contained organisms and pus, the latter varying in quantity from a few cells to a thick deposit easily recognized by the naked eye. Frequent and sometimes painful urination, occasionally accompanied by a dull ache or pain in the loin, were the usual urological symptoms. In the majority of cases the pyuria was chronic, and an attempt was made to find out the source of the infection; whether one kidney or both were involved; to what extent the renal function had been impaired and the kidney substance destroyed; whether any complication such as ptosis, calculus, or hydronephrosis was present which would tend to keep the infection persisting or predispose to its recurrence. Only after these questions had been answered could a rational line of treatment be adopted. In about 90 per cent. of cases the causative organism was *B. coli communis;* in the less common staphylococcal and streptococcal infections evidence of recent or old septic foci might be found on the cutaneous or mucous surfaces. After a preliminary *x*-ray examination of the complete urinary tract to exclude calculus all areas of the bladder were examined cystoscopically to exclude the presence of any vesical papilloma or diverticulum.

A cystitis was almost invariably found, and it was then necessary to seek further for the focus in the urinary tract. One or both ureteric orifices might be seen to be hyperaemic, swollen, or distorted, and pus, if in sufficient quantity, might be detected escaping from the orifice. If a worm-like rope of pus was ejected it might be taken for granted that most of the kidney had been destroyed. The functions of the two sides were next compared by giving an intravenous injection of indigo-carmine, and observing the appearance of the blue dye at the ureteric orifices. Normally, a strong blue should be seen at each orifice in four minutes. Should there be a delay in the appearance of the dye on one or both sides, or should the dye appear as a weak blue or green colour, and continue to be secreted without any increase in its intensity, it could then be inferred that the parenchyma was involved in the infection as well as the pelvis. Catheterization of the ureters would reveal whether the infection was unilateral or bilateral. A pyelographic examination was particularly indicated when the indigo-carmine test had revealed impairment in the renal functions. The renal pelves were filled to capacity with a 13½ per cent. solution of sodium iodide, through the ureteric catheters, and a skiagram was taken to see whether any such complication as ptosis or hydronephrosis was present, and to distinguish between pyelonephritis and pyonephrosis. In the former, pyelonephritis, the pyelogram differed from the normal in that the calyces were club-shaped or knobbed, instead of cup-shaped, that deformity being due to absorption at the apices of the renal papillae, as a result of the infection. The pyelogram of a pyonephrosis, on the other hand, showed a deep and irregular enlargement of the whole shadow. In most cases bilateral pyelography had been employed by Mr. Jacobs and no serious sequels had followed; in a few of the patients renal colic had sometimes been severe enough to require morphine.

Mr. J. MILL RENTON said that in tuberculous disease of the kidney the primary focus was often difficult to detect. The infection was almost always unilateral at first, tended to remain so for a long period, and showed practically no tendency to spontaneous cure. The symptoms of the disease, in the great majority of cases, were entirely referred to the bladder, and consisted of frequent and painful micturition associated with pyuria; it was exceptional to find any pain or tenderness in the renal regions. Any young adult who had pain and frequency of micturition with pyuria might be the subject of tuberculous disease of the kidney; an attack of haematuria was occasionally one of the first symptoms. Ordinary clinical examination was very often negative, but a deposit of tubercle might be found sometimes in the epididymis associated with a kidney lesion, or a thickened ureter might be felt per vaginum or per rectum. It had been shown that tubercle bacilli might be present in the urine without pus in cases of generalized tuberculosis without there being a definite lesion of the kidney. It was now possible to find the bacillus in the great majority of cases, and where it could not be detected animal inoculation might give a positive result. In some cases, especially in women, a marked *B. coli* infection may tend to mask a tuberculous lesion. In many cases cystoscopy indicated definitely tubercle of the kidney and even decided which side was affected. When catheterization of the ureters was impossible the injection of indigo-carmine, either into a muscle or into a vein, might be tried; if the renal disease was advanced it might be found that the excretion of the blue colour was delayed or absent on the affected side. Unfortunately in early cases the blue colour was excreted just as well by the tuberculous kidney as by the normal one. *X*-ray photographs might show a shadow where there were caseous masses or calcareous deposits in the kidney. Neither catheterization of the ureters after opening the bladder nor the operative exposure of both kidneys could be recommended, but Fullerton's plan of exposing both ureters extraperitoneally above the pelvic brim might help in the few cases where a reasonably certain diagnosis could not be obtained by less drastic methods. Pyelography was unnecessary in the diagnosis of tubercle of the kidney.

Mr. J. SCOULER BUCHANAN thought that since the diagnosis and localization of stone was possible in most cases by the ordinary physical and radiographic means, patients should not be subjected unnecessarily to the more modern, elaborate, and delicate methods of ureteral catheterization and pyelography, though the risk was very slight. The two most prominent indications of renal calculus were colic and haematuria, in macroscopic or microscopic amounts; but these were not specific. An *x*-ray examination might not give a definite diagnosis; the patient might be too obese, or the stone be one which did not cast a shadow. Calcareous glands and phleboliths often occupied the renal and ureteric regions and obscured the stone, or one might simulate a stone. By cystoscopy, ureteral catheterization, and pyelography many of these cases could be cleared up. By localization of the calculus the kidney could be saved from unnecessary trauma. Hydronephrosis could be demonstrated definitely, even in the early stages, by ureteral catheterization and pyelography, but moderate degrees of dilatation of the pelvis and calyces could not be made out at operation, and this was more noticeable in cases in which the pelvis was intrarenal in type. The surgeon might, therefore, return the kidney to its bed with a false sense of security as to its future. Pain during injection of the sodium iodide solution into the pelvis of the kidney was not of great diagnostic value, since it was common to other conditions giving rise to renal colic. Chromocystoscopy was sometimes a help in the diagnosis, as in cases where the stone was blocking the ureter, and in estimating the value of the kidney, but considerable destruction of the renal substance was necessary before the elimination of the dye was diminished.

Mr. W. W. GALBRAITH said that the vast majority of renal tumours were malignant, and the late appearance of symptoms and signs increased the danger. In the case of a palpable renal tumour the prognosis was grave and, even if removal was successful, recurrence had to be feared. Many renal tumours gave early indication of their presence by eroding a vessel which bled into the pelvis or calyces, and led to haematuria, generally without pain, although in some cases the haematuria might be accompanied by colic, owing to the blood clotting and offering obstruction to its free passage from the kidney. Pain in the back was often absent, and in many cases there was only a slight ache. Diagnosis at an early stage of the tumour's growth was essential, and so the significance of haematuria in persons of any age should not be overlooked. A full investigation of the urinary tract should be made, preferably while blood was still present in the urine. Rest in bed for a day or two would generally cure the bleeding, but only for the time being. Recurrence was almost certain, though possibly not for many months, when treatment might be too late. The urinary investigation at the very least necessitated cystoscopy and the estimation of the relative efficiency of the two kidneys. For this purpose Mr. Galbraith used an intravenous injection of 5 c.cm. of a 4 per cent. solution of indigo-carmine. Where blood was seen issuing from one ureter the kidney at fault could be distinguished, but when this was not the case the indigo-carmine—normally excreted in from three to five minutes—might be delayed. This test only applied when more than one-third of the kidney was destroyed; the kidney had a great reserve of excreting power, and would excrete the indigo-carmine solution in a normal time if the limit of destruction was less than one-third. Thus, if haematuria occurred in the very early stages of renal tumour formation, cystoscopy and indigo-carmine would not help towards showing the exact nature of the disease. In every case of actual or suspected renal tumour bilateral pyelograms were necessary. Should there be considerable encroachment on pelvis or calyces by tumour formation, the picture was typical, but in the early stages only some elongation and thinning of the calyces might be seen; variations of the normal pelvis were so frequent that comparison of the two kidneys was essential. Specimens taken from either kidney when the ureters were catheterized prior to pyelography were of little help, as tumour cells were never found in the urine thus obtained, and it was not always possible to be sure that the presence of blood in the urine collected from one kidney might not be due to trauma caused by the ureter catheter. In one of the most common congenital anomalies, an aberrant renal artery, the artery divided higher than is normal, the lower branch

being inserted towards the lower pole of the kidney. This so-called abnormal vessel often tended to constrict the uretero-pelvic junction and was thus a fruitful cause of hydronephrosis. The symptoms arising from this condition were those of hydronephrosis, and an ache in the back, generally without urinary disturbance, was the outstanding feature. These, taken in conjunction with a negative finding on *x*-ray examination, suggested the advisability of pyelography, which would at once give a perfect demonstration of the cause; the picture generally showed kinking and constriction at the pelvic outlet. It had been questioned whether mobile kidney ever caused kinking of the ureter and obstruction to the free outflow of urine, but the symptoms in many of these cases were identical with those caused by stone or any other condition which might obstruct the outflow of urine from the kidney. A negative result from *x*-ray examination indicated the necessity of making a full urinary investigation. Pyelography in such cases would not only determine the cause of the pain, but the nature of the treatment required to relieve it. Ectopic kidney, though comparatively rare, had been mistaken for tuberculous disease of the caecum, and an operation showed only a non-inflammatory retroperitoneal tumour suggestive of kidney. Pyelography proved the truth of the supposition, and further showed that the mass consisted not of one but of two kidneys, fused, and of the horseshoe type. The ureters in this case proceeded to the mass from normally situated bladder openings. It had been estimated that one in about every two thousand four hundred persons had only one kidney, a fact which should be remembered by the surgeon performing a nephrectomy, and more especially where sepsis was present and the loin incision was used. It should be a rule never to remove a kidney without previously having made certain of the presence of a second, and apart from opening the abdominal cavity—a proceeding not without danger in the presence of sepsis—the only method was pyelography; cystoscopy showing the normal excretion of indigo-carmine from a normally placed ureter might be fallacious. Horseshoe kidney, the presence of double ureter, double kidney, and various other developmental defects were all conditions which in most instances should be recognized before and not at operation.

Mr. JAMES R. LEARMONTH considered that employment of the modern diagnostic methods required as great attention to surgical ritual as did any other operation. In uninfected cases freedom from chills and fever after the examination might be taken as an index of the attainment of surgical cleanliness; it was practically certain that these resulted from temporary bacteraemia. That the number of such reactions could be reduced to a very low figure was shown in a recent series of five hundred pyelographies, in which only seven patients had pyrexia above 100° F. Given that the surgical technique could be made irreproachable the cystoscope was definitely contraindicated: (1) when the patient was aged and infirm; (2) when he was greatly weakened; (3) when bilateral renal impairment of an extreme degree was present, as detected by clinical data, studies of the blood chemistry, and renal efficiency tests; (4) when it was apparent that no surgical procedure could be of any benefit. Under the first three conditions even the mild ordeal of cystoscopy might turn the scale against the patient, and suppression of urine might occur. As an example of the fourth contraindication might be cited the hypothetical case of a patient who had haematuria, a mass in the loin, and a pathological fracture of a long bone. In introducing the cystoscope various anatomical difficulties might be encountered; thus phimosis, an unusually narrow meatus, or a urethral stricture might require correction. If dilatation of a stricture was necessary before the cystoscope could be passed it was probably better to defer cystoscopy for a few days. In prostatic cases a well marked intravesical projection might offer an obstacle to the passage of the instrument. Inspection of the bladder alone might solve the urinary problem, and in such cases the routine passage of ureteral catheters was to be condemned. The circumstances in which it was justifiable to catheterize the ureters were: the presence of pus or blood in the urine not accounted for by the condition of the bladder and urethra; the need of determining the individual function of each kidney; the necessity of making a pyelogram; and the necessity for identifying a ureteral stone. Certain precautions might be taken to guard against the possibility of conveying infection to a non-infected kidney by the passage of a ureteral catheter through an infected or tuberculous bladder. The previous exhibition of urinary antiseptics helped to reduce the infection; the bladder must be well washed out before the cystoscope was introduced, and in certain types of instrument the ureteral catheter might be introduced and passed while continuous irrigation was provided through the cystoscope. When these precautions were taken the risk of infecting the kidney was very slight. There might be considerable anatomical difficulty in finding the ureteric orifices and introducing the catheters. Thus the ureters might enter the bladder at abnormal positions; the presence of a cystocele might distort the vesical picture; and in infected bladders, especially when the infection was tuberculous, scarring from cystitis and ureteritis might impede the passage of the catheter, or might even prevent the identification of the ureteral orifice. In the latter case it might be necessary to expose one or both ureters in the loin, as described by Fullerton, in order to discover the state of the kidneys. Pyelography should not be attempted when a diagnosis could be reached without it, as, for example, in hydronephrosis, by obtaining a large amount of residual urine from the kidney pelvis; in the aged, infirm, or emaciated; and in acute infection of the kidney. Pyelograms might be made on both sides at the same time, should it seem desirable. The solution employed for pyelography was non-irritating, non-toxic, easily sterilized, almost neutral in reaction, and flowed in and out of the pelvis as easily as water. Its only disadvantage was that it was not germicidal. Too much solution must not be introduced. The patient was conscious, and was thus able to complain of the pain to which over-distension gave rise, although if the catheter had been pushed so far in that its eye rested in a calyx he might complain of pain after the introduction of enough fluid to distend the calyx alone. In practice this error was easily recognized and rectified by withdrawing the catheter an inch or so. Then, again, the calibre of the ureteral catheter should be such that any excess of fluid could escape down the ureter. Fluid introduced at too high a pressure was apt to find its way into the intrarenal venous system; such a possibility ruled out pyelography in acute kidney infections. After the radiogram had been taken the fluid was removed from the renal pelvis with a syringe before the catheter was withdrawn. The interpretation of the pyelogram was often beset with difficulties. There were so many variations in the shape of the normal pelvis and calyces that a considerable amount of experience was required before it could be definitely said that the pyelogram was abnormal, and the appearances must always be considered in the light of the clinical data.

DEEP X-RAY AND RADIUM THERAPY IN RELATION TO THE UPPER RESPIRATORY TRACT.

AT a meeting of the Section of Laryngology of the Royal Society of Medicine on December 2nd, Mr. HAROLD BARWELL presiding, a discussion took place on deep *x*-ray and radium therapy in growths of the mouth and upper respiratory tract. It was preceded by the exhibition of a number of specimens and cases, and members of the Section had an opportunity earlier in the day of visiting the throat and the radiotherapeutic departments at St. Bartholomew's.

Dr. W. L. WATT described the applications of *x* rays of extreme hardness, filtered through copper or zinc, in the treatment of growths, and pointed out the differences between deep therapy of the upper respiratory tract and that of the uterus. The uterus he compared to an island; it was completely surrounded by fluids, and gave opportunity for that wide action of the rays which was particularly desirable in order to inhibit and destroy the disease. But should the same principles of application be employed in the radiation of the larynx, where one had, not an island at all, but a surface covered or partially covered with air, general overdosage would be extremely likely to

occur, with rapid breakdown of the tissues. Any expedient which could increase secondary radiation would be of value, but several had been tried without much result. Otherwise, all that could be done was to make the fields of application as large as possible, and, by varying the voltage and screenage, rays of practically any desired length could be obtained. There was undoubtedly a general as well as a local effect from radiations. As a result of the destruction of the cells toxins were absorbed into the blood, and there seemed every reason to believe that antibodies were formed. His impression was that the whole question of recovery or otherwise depended largely upon the power of patients to develop these antibodies. The question of dosage was most difficult, and the amount could be decided only by reference to each individual patient. His own endeavour in dealing with malignant conditions was to apply to the growth the same amount of rays as would cause a slight skin reaction within three days. If necessary he followed the first course of ray treatment by a second and a third. Deep therapy was no rule-of-thumb procedure; it was a matter for careful observation and experiment.

Dr. N. S. FINZI, speaking of radium applications, said that the early method of using plaques was not very successful, and that of burying tubes in the tissues could seldom be carried out satisfactorily under the conditions obtaining in the neck and throat. Next came the use of needles, distributed in and around the tumour, whereby it was hoped that a homogeneous barrage might be set up. Later still came the use of radon (emanation) "seeds," minute quantities being used according to a method originating in America. The application of *x* rays to a growth was also carried out in several ways, including the cross-fire and glancing methods. Much discussion had arisen as to whether small doses of rays should be used for a long time, or large doses for a short time. With radium the former method had been employed. One thing was certain: that simply to multiply the amount of radiation by the time did not furnish the true dose unless the two factors were stated separately. If a given number of millicurie-hours were taken the shorter the time factor in relation to the amount factor the heavier would be the effective dose. He was inclined to think that cases which had been treated first by buried radium and afterwards by the *x* rays did better than those which had not received the preliminary treatment, possibly because the true lethal dose was thereby administered to sections of the tumour, and thus the resistance of the rest of the tumour was weakened. The lethal dose, which was something more than double the dose which would produce a fairly severe erythema of the skin, must not be given to the whole tumour. Subsequent treatments might be advisable in cases which had responded to the first treatment, in order to destroy the remnants of the growth, and in other cases for palliation. The choice of methods depended on the type of growth. Lymphosarcoma was exceptionally sensitive, and if treated before general metastasis had occurred the prognosis was very favourable. Endothelioma usually responded best to radium treatment or to *x* rays of the shorter wave-length. Epithelioma was often more resistant to *x* rays than to radium, and if *x* rays were used they must be of the shortest wave-length obtainable. It looked as if there might be an optimum wave-length for any particular growth. The site of the growth also influenced treatment. It was fairly easy to apply radium needles to the tongue and larynx, more difficult to the epiglottis, though "seeds" could be used in this situation. Spindle-celled sarcoma usually responded well. Statistical results relating to inoperable growths of various kinds in favourable situations, with well chosen methods of radiation treatment, showed that a disappearance of the growth, lasting for five years, was brought about in from 10 to 20 per cent. of cases. The figure was not impressive, but no other treatment had been shown to be more than palliative.

Mr. STANFORD CADE thought that lesions of the roof and back of the mouth responded better to radiation than those of the floor. Tumours of the palate could be made to disappear in nearly every case by means of radium. For treatment the mouth must be clean, and nearly all the teeth might have to be sacrificed. He had used radium needles, placed in the healthy tissue, not in the growth, and kept in position by means of sutures.

Sir WILLIAM MILLIGAN thought that radium was at last coming into its own. The fact that it had never been tried in cases other than those which were inoperable had masked its advantages. The demonstration at St. Bartholomew's Hospital that morning he regarded as epoch-making. He had seen nothing to compare with it except in a clinic at Brussels, and that related only to a very few cases. He had had experience of all the phases of radium application—plaques, applicators, needles, spicules, and "seeds." Unscreened glass spicules gave rise to a good deal of pain and to some sepsis, but a platinum casing avoided this altogether. The pendulum was swinging in favour of non-surgical intervention in malignant disease of the tongue. In Manchester the surgeons at the Royal Infirmary had practically ceased to operate upon the tongue in these cases and sent them to the Radium Institute, just as at St. Mary's, Manchester, surgical treatment of cancer of the cervix of the uterus had been practically given up. He wondered whether the introduction of radio-active substance into a growth was likely to stimulate the glands, and whether, if it did, this was not an argument for removing the glands first, and afterwards irradiating the primary focus. He was quite sure that if treatment of cancer, whether surgical or non-surgical, was to be successful, it was essential that the glandular areas should be removed. Laryngologists rather missed that point. They were prone to deal with the local lesion in the mouth or larynx, and to forget the lymphatic tributaries. The cellular character of the growth had a great deal to do with the selection of treatment. Generally, the more the tumour approached to the embryonic type the better was the outlook for radium treatment as opposed to surgery, and the more formed or fibrosed it was, the less useful was radium, and surgery ought then to have its innings. He pleaded for team work between surgeon, radiologist, and pathologist.

Dr. WILLIAM HILL had used "seeds" encased in glass in the larynx in a case which would be described as inoperable (though he objected to that expression); they were placed in a big fungating mass, with the result that the growth was enormously reduced in a short time, and there was no pain at all from the application. But, in another case, on using seeds encased in glass in the tonsil area a most intense pain was caused, so that he hesitated to use glass casing again, and he believed this was now being given up in favour of a platinum casing. He also described a case of typical epithelioma of the vocal cord to which platinum encased needles had been applied, and an excellent result had been forthcoming.

The PRESIDENT said that he had been greatly impressed with what he had seen at St. Bartholomew's that morning—the work of Mr. F. A. Rose, Mr. Douglas Harmer, and Dr. Finzi. He might quote one remark made by Mr. Harmer—namely, that if he saw a case of malignant disease too far advanced for laryngeal fissure, but suitable for laryngectomy, he considered it should have radiotherapy first, but if it was suitable for laryngeal fissure he was rather in doubt as to what position he would take up. That, the President thought, would be the general view.

ANAESTHESIA IN THYROID SURGERY.

AT a meeting of the Section of Anaesthetics of the Royal Society of Medicine on December 2nd, a paper on "Anaesthesia in thyroid surgery" was read by Mr. T. P. DUNHILL.

Mr. Dunhill declared that the administration of anaesthetics to patients suffering from the various forms of goitre called for great ability on the part of the anaesthetist. Mechanical difficulties were encountered in cases of bilateral colloid goitres and in intrathoracic goitres, in addition to which there were complications such as tachycardia. These patients had often unclean mouths and septic tonsils. A quiet anaesthesia was essential since, otherwise, a second operation might be necessary to complete the removal of the gland. Mr. Dunhill had at first preferred chloroform since it reduced bleeding, but it was dangerous to use adrenaline with it, and in exophthalmic cases it was positively contraindicated. On rare occasions

it was the anaesthetic of choice, and was best administered by the single drop method. In most cases requiring a general anaesthetic ether had replaced chloroform. The method of choice was the intratracheal, since it enabled a sterile field of operation to be maintained and ensured a smooth anaesthesia. The rectal method of administration was useful at times, since the head of the table was freed from apparatus. A light degree of narcosis was required and not full surgical anaesthesia; the dose should be calculated on the side of under dosage. It could be supplemented if necessary by inhalation of ether, or gas and oxygen. Nitrous oxide with oxygen was valuable and might be combined with local anaesthesia. The latter was unsuitable for young or frightened patients, but it had the advantage of securing a bloodless field; for its proper exhibition there must be mutual co-operation between patient and surgeon. For adenoma endotracheal gas and oxygen with possibly a little ether was indicated in most cases. An *x*-ray examination was essential to determine the position and shape of the trachea; no anaesthetist should be expected to pass an intratracheal catheter until this had been done. For colloid goitres general anaesthesia with ether was advisable, preferably by endotracheal methods. Gas and oxygen could be used except in patients suffering from great mental stress. In exophthalmic cases chloroform was contraindicated, and probably ether was the most satisfactory anaesthetic. Out of 700 operation cases he had used local anaesthesia in 403, and general anaesthesia in 292; in 5 cases he had been unable to trace the anaesthetic used.

Sir JAMES BERRY said that he preferred open ether by the drop method with a very light depth of anaesthesia. In cases with dyspnoea, cyanosis, and defective cardiac condition local anaesthesia was the most satisfactory form, and this was also the case with exophthalmic goitres. Dr. Z. MENNELL raised the question of the value of preliminary medication in goitre cases. Dr. J. BLOMFIELD thought that an undesirable depth of anaesthesia might be required in order to pass the intratracheal catheter. Dr. G. I. MORIARTY believed that the anaesthetic was more dangerous than the operation. Lady BERRY preferred the open ether method with the minimum of anaesthesia, so that patients were in a state bordering on consciousness and talking. She denied that ether was an unpleasant drug for induction when given slowly; dyspnoeic cases often improved under this anaesthetic, the action of the heart being regularized where it had been disordered before induction. Dr. L. HEWER condemned the practice of anaesthetizing nervous patients in bed and then moving them on a trolley to the theatre; such a proceeding was dangerous in goitre cases. In toxic cases with fibrillation local anaesthesia alone should be used. In his experience hot vapours were more irritating than cold, and so should be avoided in goitre cases. Dr. C. F. HADFIELD agreed as to the irritating qualities of warmed anaesthetic vapours, but Dr. F. T. EVANS disagreed; he believed that by warming the vapour it was possible to ensure an even flow of properly vaporized anaesthetic. Moreover, the temperature of such a vapour, when it reached the patient's mouth, was very little above room temperature, if the warming chamber was not placed too close to the mouth.

Mr. DUNHILL, in reply, said that he certainly believed in the efficacy of preliminary medication, which was especially beneficial in operations under local anaesthesia. He advocated scopolamine and morphine in these cases, and he preferred morphine to omnopon or pantopon. For injection he used novocain of a strength of one quarter of 1 per cent. He did not think that a great depth of anaesthesia was essential for the passage of an intratracheal catheter. He had not observed much haemorrhage follow the use of local injections in goitre cases.

TECHNIQUE IN TROPICAL DISEASES.

AT a meeting of the Section of Tropical Diseases and Parasitology of the Royal Society of Medicine on December 1st, the President of the Section, Professor R. T. LEIPER, F.R.S., in the chair, a number of papers on recent advances in technique were read.

Dr. H. H. SCOTT described his method of estimating the amount of ionic calcium in the blood serum for the diagnosis of sprue, and for determining the progress of the patient. In the blood plasma, calcium was present in the ionic form, free or diffusible (6 to 6.5 mg. per 100 c.cm.), and in the combined or non-diffusible form (4 to 4.5 mg.). On clotting of the blood all the calcium became ionic, and so in the serum the amount of ionic calcium represented the total calcium. In sprue serum, however, although the total calcium was about normal, the ionic was much diminished, being sometimes as low as 6.3 mg. in a severe case, the remainder being combined. With convalescence this figure gradually rose until, when the patient had recovered, the figure was again normal. From an experience of many hundred cases Dr. Scott had found that this remained true for sprue only. The test had three stages. To graded quantities of ammonium oxylate were added in series fixed amounts of fresh blood; the tubes were incubated for ten minutes at 37° C., and the highest dilution with absence of clotting was noted. A series of tubes were put up with this dilution, fresh blood was added together with fixed amounts of graded calcium chloride; in this way the smallest amount of calcium causing complete clotting was determined. The last series was repeated, using the patient's serum instead of the calcium; and by a simple calculation the calcium content could be found. In normal serum there was 10 to 11 mg. of ionic calcium; in severe sprue only 6.3; in a mild case 7.8 to 8.2; while in a cured case the figures of 10 to 11 were again found.

Dr. P. MANSON-BAHR discussed technique as applied to clinical diagnosis, referring among other methods to serum tests for trypanosomes, agglutination methods on microscopic slides, the intradermal test for undulant fever, and the use of the sigmoidoscope in diagnosis of the various forms of dysentery. By this last test scrapings of the mucosa could be made, and cultures might often enable a diagnosis between the amoebic and the bacillary forms.

Dr. J. GORDON THOMSON discussed protozoological technique, and drew attention to the necessity for an accurate knowledge of the use of the microscope. All the intestinal protozoa could be readily diagnosed in a faecal film preparation if the illumination was properly arranged. He also referred to methods of culture of these forms, all of which, except *Giardia*, could now be successfully cultivated in artificial media.

Dr. W. NICOLL considered the methods by which helminthic infections could be diagnosed by means of faecal preparations and blood smears, the various clinical methods of diagnosis in use, including the intradermal tests for hydatid and similar conditions, the methods of collecting helminth parasites, and their preservation.

Dr. V. B. WIGGLESWORTH, who dealt with entomological technique, described methods of rearing in the laboratory blood-sucking bugs, such as those which transmitted South American trypanosomes.

Dr. J. BROUGHTON ALCOCK, in discussing bacteriological technique, gave details of the "slide agglutination" tests for various bacteria—especially those of the typhoid group. Drops of emulsions of the organisms to be tested were laid along one edge of a slide and opposite each was placed a drop of the suspected serum. By tilting the slide each drop of organisms was made to mingle with the corresponding drop of serum; Dr. Alcock had found that the mixture which first showed agglutination was the cause of the condition. He also drew attention to cytological methods of distinguishing between amoebic and bacillary dysentery. In the first condition degeneration was partly from without; in the latter it was from within. In the tropics, chicken-pox could be distinguished from small-pox by means of Jennerian vaccination; if the suspected condition was small-pox the vaccination would not "take."

Mr. RAMSBOTTOM dealt with mycology from the medical point of view, and said that morphology was the first stage in the diagnosis of the microfungi. All groups could not be cultured on an artificial medium, and cultures were best examined in distilled water or in lacto-phenol. In many cases morphology alone was insufficient, and certain physical, biochemical, and pathological tests were necessary also, in addition to normal sporulation and life history.

Many fungi such as ringworm were pleomorphic, but this was often not seen in the standard media in which pathological fungi were generally known. A large number of different media should be used in order to obtain the "perfect" form. As a rule only the "imperfect" form had been seen in the pathological types. A thorough knowledge of general and plant mycology was essential before the study of the more difficult forms could be successfully undertaken.

Dr. J. F. C. HASLAM, in discussing the technique of hygiene, said that this subject ranged over the entire field of human life; the most difficult part of it, perhaps, was to deal successfully with colleagues, more especially in the tropics. He drew attention to the many kinds of problems in this sphere—drainage, housing, water, latrines, and general sanitation. He illustrated his remarks by lantern slides of tropical conditions.

Dr. ANDREW BALFOUR reviewed the whole subject and proposed a vote of thanks to the speakers.

In closing the meeting the PRESIDENT announced that a laboratory meeting would be held at the London School of Hygiene and Tropical Medicine on January 5th, 1928, at 8.15 p.m., at which the various speakers would demonstrate the several forms of technique to which they had referred that evening.

SPLENIC ENLARGEMENT.

AT a meeting of the Devon and Exeter Medico-Chirurgical Society held at the Royal Devon and Exeter Hospital on November 27th, Mr. A. L. CANDLER (in the chair) showed two patients with splenic enlargement.

Mr. Candler said that the first patient, a woman aged 31, had been confined on October 9th, 1927, and was admitted to hospital on October 21st with a ruptured perineum and puerperal fever; she was in a condition of profound anaemia. The temperature was 101° on admission and the pulse 136. Owing to foul-smelling lochia the uterus was cleared out and collosol iodine given. On November 5th there was further rise of temperature, and a large tumour was found to project from the left costal margin and extend to the mid-line. A blood count showed: haemoglobin 45 per cent.; colour index 0.75; red blood cells 3,032,000 per c.mm.; leucocytes 2,600; differential count—polymorphonuclears 6 per cent., lymphocytes 33 per cent., large mononuclears 6 per cent., and eosinophils *nil*.

The second patient was a woman, aged 49, with Banti's disease. Frequent haematemesis had been the only complaint, and had occurred on five occasions during twelve years; she had brought up five pints of blood in October, 1927. The liver and spleen were enlarged and the blood count was: red blood cells 4,800,000 per c.mm., haemoglobin 70 per cent., colour index 0.8, and white cells 5,000, polymorphonuclears 62 per cent., small lymphocytes 32 per cent., large lymphocytes 5 per cent., and eosinophils 1 per cent. No abnormal cells were seen. Since 1925 she had been given iron and arsenic internally, and had had three treatments with *x* rays. It had been decided to perform splenectomy.

Dr. W. GORDON, discussing the two cases, alluded to Banti's disease as splenic anaemia which had set up hepatic cirrhosis and ascites. The operation mortality for splenic anaemia was 12.5 per cent., and for Banti's disease (which had progressed to ascites) 50 per cent. In the case of Banti's disease splenectomy had been indicated before the meeting in view of the severe haemorrhages. Dr. Gordon considered that splenectomy was the only treatment for splenic anaemia, and in his opinion the earlier it was performed the better it was for the patient. As regards relief of the symptoms in Banti's disease splenectomy was usually successful in patients who survived the actual operation; other treatment could only be regarded as palliative.

Carcinomatous Metastases in Bones.

Dr. Gordon read notes on the *x*-ray appearances of secondary cancer in bones in a case of carcinoma of the prostate. He said that the photographs shown illustrated admirably the features of secondary cancer in bones. The history of the case practically indicated the diagnosis which had been established by rectal examination and the skiagrams. It was regrettable that there had been no autopsy. The patient, aged 62, was in his usual health until October, 1926, when he began to have pain in his right thigh. In the following January he had to take to bed, where the pain became less severe; but, about a month later, pain commenced in the left thigh, and the lower part of his back became stiff. He could not move his pelvis in bed without great suffering; he lost flesh and grew weak. A fortnight before admission, while making some ordinary movement against moderate resistance with his right arm, he fractured the humerus near the shoulder. Such a history indicated the need of a rectal examination, and the prostate was found to be hard, small, and irregular; there was no growth of the bowel wall, and no bladder symptoms. In May cancer with bony metastases was diagnosed and the patient was sent into hospital for a radiological examination; he had no spinal disease. The *x*-ray pictures showed fracture of the neck of the humerus with surrounding bony changes; there were similar metastases throughout the right side of the pelvis and some in the left pubic region. The patient was kept comfortable with morphine till his death in September. Dr. Gordon said that there were four primary cancers specially prone to metastasize in bone; these were carcinoma of breast, prostate, and thyroid, and, in children, certain medullary hypernephromata. The last named affected the skull, the others involved the skeletal bones, selecting the proximal long bones in the limbs. In the prostate cases the first symptoms calling attention to the disease were often those due to the bony deposits.

Clinical Cases.

Dr. HUGO showed a man, aged 56, with diaphragmatic hernia, which had been accidentally discovered during a routine examination for an ulcer of the nose. It was found that the heart was displaced to the right, and *x*-ray examination revealed that the stomach and splenic flexure of the colon were in the thorax. It was thought probable that there was a large congenital defect in the left leaf of the diaphragm. The man had worked hard as a farmer, and beyond slight shortness of breath made no complaints which could be referred to the malposition.

Mr. NORMAN LOCK showed an infant, aged 6 weeks, on whom he had operated at the age of 3 weeks for meningo-myelocele. The protrusion was disinfected and completely removed. Paralysis of the rectum now existed, but the bladder functioned normally. Mr. Lock remarked that hydrocephalus was liable to follow at a later age—3 to 5 years. Mr. Lock also showed a boy, aged 4½, with rheumatoid arthritis, who had been admitted to hospital last February with limitation of movement in the left hip- and knee-joints, effusion into the left knee-joint, and some apparent thickening of the tissues round the right hip-joint. The boy was put up in a plaster case so as to include the pelvis, the left knee, and the right thigh and leg. In June it was noted that there was spasmodic contraction of the muscles round both elbow-joints on active or passive movement. No information was derived from *x*-ray examination in June, and no improvement had seemed to follow the wearing of the appliance. In September a long-chain streptococcus was cultivated from the throat, and vaccines so derived were given. In November a further *x*-ray investigation revealed an enlargement, rather knobby in character, in the region of both elbow-joints. Ultra-violet rays had been tried, but attention was now being devoted chiefly to the prevention of deformities. Massage had been considered harmful as being likely to set up irritation of muscles. Dr. W. GORDON said that these cases came under the classification of Still's disease, and tended to improve in time.

Mr. DYBALL, in association with Dr. CARROLL, showed a woman, aged 60, with lumps in the skin of the breast resembling "blind boils," which were indurated round the bases and exuded a purulent-like fluid on squeezing. No glands had been noted in the axilla. The case had improved slightly with fomentations. Mr. Dyball considered that this might be an unusual variety of Paget's disease, the nodules being away from, and not involving, the nipple. He had referred the case for *x*-ray treatment, since in his opinion there was too extensive involvement of skin to justify excision. Dr. R. V. SOLLY, who had cut sections of the growth and found a glandular-celled carcinoma, was not quite reconciled to a diagnosis of Paget's disease, since the classical description was a columnar-celled carcinoma growing from the ducts.

Mr. A. L. CANDLER showed a man with "a lump in the groin"; there was a history of the excision of a similar lump on the same side in 1916 and also about eighteen months ago. Mr. Candler asked for the opinion of the meeting on the diagnosis. Mr. Dyball said he had seen a similar case where the diagnosis proved to be spindle-celled sarcoma.

Pathological Exhibits.

Dr. R. V. SOLLY showed four specimens. The first came from a case of alcoholic cirrhosis of the liver in a man, aged 53, who was an old soldier and a consistently excessive beer drinker. There was severe haematemesis on admission to hospital. The necropsy disclosed very marked cirrhosis of liver (typical hob-nail), and slight ascites; the veins of the stomach were much dilated. The second was a case of syphilitic cirrhosis of liver in a man, aged 42, with two months' history of ascites; the patient gradually became comatose and died from hepatic toxaemia. There was a positive Wassermann reaction. The necropsy revealed an irregular cirrhosis, mainly of the hob-nail type, with areas of excessive fibrosis; the spleen was also enlarged. The third was a case of diverticulitis with perforation in a man, aged 63, who gave a history of three to four months' constipation and intestinal colic. He was subsequently seized with sudden severe

abdominal pain and rigidity, and died during transport to the hospital. At the necropsy free gas was found in the abdomen, and the intestines were reddened, inflamed, and covered with flakes of lymph. There were several inflamed and indurated diverticula of the pelvic colon; on opening the bowel one of these showed ulceration with perforation into the general peritoneal cavity. The fourth specimen was the heart of a pig, showing endocarditis, obtained from a case of infection with swine erysipelas; there were large vegetations in the region of the auriculo-ventricular valves.

Mr. B. DYBALL showed a case of chronic intussusception of the jejunum, where, during operation, it was found that the duodenum was larger than the colon. The whole mass was resected, and recovery had been uneventful. Dr. GORDON stated that he had seen the patient five months prior to the operation with symptoms at that time very uncertain, although suggesting the possibility of gastric ulcer. No tumour could then be detected in the abdomen.

Mr. A. L. CANDLER showed a "strawberry gall bladder" removed from a woman in whom colotomy had previously been performed for obstructive symptoms relative to diverticulitis of the lower sigmoid. During the past year there had been abdominal pain, frequent vomiting, and loss of weight. Although she was tender over the gall bladder, there had been no attacks of biliary colic. Adhesions were found at the operation.

TREATMENT OF LUPUS.

AT the meeting of the Section of Medicine of the Royal Academy of Medicine in Ireland, held on October 28th, Dr. E. T. FREEMAN showed a cured case of lupus vulgaris and another of lupus erythematosus. In the first patient, a woman aged 35, the duration of the lupus vulgaris was not definitely known, but it had been present for at least twenty-one years. It occupied the left parotid region, and extended forwards from the angle of the jaw to nearly the mid line of the neck. It was crusted and verrucose over the parotid, and of the dry non-ulcerative type on the neck. The treatment had consisted of light baths three times a week with carbon arc lamps, and galvano-cautery every three weeks, to pick out individual nodules. The patient was now practically cured. The scar was fine, supple, and very slightly noticeable. The patient had been under treatment since June, 1926. The second patient was a woman, aged 34, who had had lupus erythematosus for nine years. In the February issue of the *Archives of Dermatology* Jay F. Achamberg, who had had considerable experience with other gold compounds, had reported 25 cases, mostly still under treatment, with sanocrysin. These were the first cases in which this drug had been used in lupus erythematosus. In April last Dr. Freeman had started treating two patients, one of whom had failed to continue attendance, and the patient now shown was the other. She had received seven intravenous injections of 0.10 gram each, at weekly intervals. There had been an immediate and steady improvement with entire disappearance of the lesion in seven weeks. The white atrophic scar always left by lupus erythematosus could be well seen. Dr. Freeman believed that this was the first case of this condition treated by this drug in Great Britain or Ireland, and the result had been perfect. There had been no reactions from the injection, and no local treatment had been used. He did not wish to over-emphasize the deductions from a single case, but the other patient had been doing equally well, and no other treatment, external or internal, had ever given him a comparable result. The PRESIDENT said that in neither case was the scar noticeable. He thought that the doses of sanocrysin in the second case had been very small, to be so efficient, and it was interesting to notice that the patient had had no reaction or discomfort after treatment. Dr. MAURICE DRUMMOND thought that the result in the first case had been very good, considering the extremely delicate work which the galvano-cautery required. The reason that such care was essential in its use was the danger of leaving scars. The disadvantage of treatment by the carbon arc lamp was the length of time required. He suggested the possibility of the use of *x* rays, galvano-cautery, and ultra-violet rays in treating these cases, the *x* rays being applied locally, and the ultra-violet rays generally. Dr. W. G. HARVEY, referring to the effect of *x* rays on cases of lupus, said that elsewhere he thought their use was regarded as almost criminal. If applied badly, they could do much harm, but, if properly treated, cases of lupus improved wonderfully after their application. Lupus erythematosus was exceedingly hard to cure. He did not agree with the belief sometimes expressed that lupus erythematosus was a tuberculous disease, and he hoped that the result of treatment by sanocrysin would not be quoted in support of that belief.

CHANGES IN OBSTETRICAL PROCEDURES.

AT a meeting of the Section of Obstetrics of the Royal Academy of Medicine in Ireland on November 4th the President, Dr. GIBBON FITZGIBBON, took the chair and delivered an address on some points in obstetrics calling for reconsideration and possibly revision.

Dr. FitzGibbon first referred to the increased frequency with which Caesarean section was performed for contracted pelvis without there being a corresponding reduction in the number of craniotomies and difficult forceps deliveries, or any considerable improvement in the mortality of the mothers and infants. He advocated ante-natal clinics strongly, and he looked forward to such a development as holding out the only hope of improvement in the future. He considered in detail the various conditions of expectant mothers which could be dealt with by ante-natal supervision; early treatment in such cases would lessen the need for operative midwifery.

Dr. L. CASSIDY did not agree that diet had such an important bearing on the presence of albuminuria, which occurred in 85 per cent. of the cases. He thought that 2 grams per litre showed a really severe condition of kidney disease, and that the strain thrown on the kidneys in even a perfectly normal pregnancy was fairly great. In the treatment of contracted pelvis Caesarean section must be regarded as a failure of obstetrics; the number of women who required it at term was comparatively small. If every woman was carefully examined at the thirty-sixth week of pregnancy he thought the mortality from Caesarean section would be reduced almost to vanishing point. The operation should be attended with very little risk to the patient; 30 per cent. of all women had the head unfixed at the onset of labour, and yet a fairly large percentage of the women would have a perfectly normal labour. Every woman at the thirty-sixth week in whom the foetal head could not be forced into the pelvis should be examined under anaesthesia in order to find out why the head could not be got into the pelvis.

Dr. BETHEL SOLOMONS, the Master of the Rotunda, said that he had increased the scope of ante-natal supervision in the Rotunda very largely. He thought that private practitioners should charge a composite fee for attendance, in order to encourage patients to attend regularly, and where patients were attended on the panel system ante-natal supervision should be paid for and should be compulsory. The incidence of Caesarean section had become greater and the operation had been abused. In spite of every effort to avoid it, the number of cases at the Rotunda had increased, but the operation was performed nearly always after a trial of labour, and the lower segment was the site of choice; the operation in this neighbourhood could not be regarded as a failure in obstetrics, and in cases which, after careful ante-natal supervision, a thorough trial of labour, combined with pelvimetry, terminated in a live mother and child, the end-result might be regarded as good obstetrics.

Sir WILLIAM SMYLY agreed that toxaemia was provoked by superabundance of feeding. He did not think that enough Caesarean section operations were performed in cases of placenta praevia, and in Germany the operation was now frequently used in cases of eclampsia. Regarding the question, "How long should labour be tried?" he thought that this resolved itself into a matter of experience. The head would remain above the brim till the cervix was retracted. If the cervix was not drawn up within three or four days he did not believe that many obstetricians would wait much longer.

Dr. J. S. QUIN said that Caesarean section was a way of getting out of a difficult case, but he believed that all obstetricians wished to avoid performing the operation unnecessarily. He thought that the operation had not

been used enough in the peculiar cases which occurred occasionally. The results obtained from it were poor, and not on a par with the results of any other major operation in surgery for a non-malignant condition. The maternal mortality was large, and there was at least 50 per cent. sterility after the operation. He thought that diet had some bearing on albuminuria, for he had noticed while at the Rotunda Hospital that the patients who had the worst albuminuria were of the well-to-do artisan class, who would get plenty of food.

Dr. A. H. DAVIDSON considered ante-natal work the most important advance in obstetrics within recent years. It brought a large number of women with abnormal pregnancies into hospital. He quoted statistics of a maternity welfare association in Detroit which indicated that the mortality of cases delivered in that city was 6.75 per 1,000, and the mortality of those delivered in the clinic was 3.5 per 1,000. The deaths from puerperal sepsis in the city were also much higher than in the clinics. The maternal mortality had been reduced by over one-half, but the mortality from eclampsia had only been reduced by 25 per cent.; 30 per cent. of the women who attended the ante-natal clinics were found to have some intercurrent disease or abnormality, which in the majority of cases could be set right. Only 6 per cent. of the women of Detroit, however, came to the clinics. Ante-natal care should be continued as post-natal care.

Dr. A. P. BARRY had found that the urine of almost every pregnant woman contained albumin, and he thought that the only way to arrive at a conclusion about albuminuria was to obtain a catheter specimen.

Dr. R. H. CORBET, referring to ante-natal care, said that the chief difficulty now was the inertia of the people; if this could be overcome he felt that a great advance would be made. The increase in Caesarean section and eclampsia was due in some measure to the increased transport facilities; many cases were sent up to town which some years ago would have been treated in the country.

The PRESIDENT, in his reply, stated that he did not condemn operative midwifery in the hospitals, but he thought that the cases ought to diminish. Any patients who showed abnormality at ante-natal clinics should then be put under special care. Regarding trial of labour, he said that in some cases seven or eight hours was long enough, but in others it was not. After trial of labour, he at present favoured lower segment section, though at one time he had performed the classical segment section. The important thing in the management of obstetrical cases was to watch them all through. The question of diet and its relation to albuminuria should be investigated by the aid of ante-natal supervision, as it was well worth while going into. In England the maternity hospitals did not practise internal pelvimetry. The picking out at ante-natal clinics of patients who were going to have abnormal labours, and persuading them to go into hospital, would reduce the maternal mortality.

ABERDEEN MEDICO-CHIRURGICAL SOCIETY.

A CLINICAL meeting of the Aberdeen Medico-Chirurgical Society was held on November 3rd, the President, Dr. J. F. CHRISTIE, in the chair. Dr. L. STEWART SANDEMAN showed a case of aneurysm of the ascending aorta in a woman aged 50. There was definite bulging of the chest wall to the right of the sternum about the level of the second rib. The left vocal cord was abducted, and the left radial pulse was hardly perceptible. The Wassermann reaction was positive. A skiagram showed the aneurysm very clearly. Under treatment with weak tincture of iodine ♏ x three times a day there had been marked diminution of the dyspnoea and the patient felt better. Dr. J. CRAIG showed a girl, aged 7 years, with calcinosis and widespread calcareous deposits in the subcutaneous tissues. She was given iodides for three months with no improvement, and it was only after treatment with doses of sodium phosphate that the deposits began to disappear rapidly. Mr. F. K. SMITH brought a patient for diagnosis. A woman, aged 53, had complained of tingling and altered sensation in the left forearm and hand for six weeks; she had noticed a swelling in the left side of the neck for four weeks. Before the tingling came on she had had several attacks of bronchitis. On examination a hard, irregular mass was felt at the root of the neck; it was immobile and definitely fixed to the deeper structures. It was not tender on pressure and there was no difficulty in swallowing, the mass remaining stationary during the act. There was a well defined semicircular area of dullness over the left apical region, with diminished breath sounds and vocal resonance, but no signs of fluid. An *x*-ray examination revealed a tumour mass occupying the upper part of the left lung and extending into the neck. The Wassermann reaction was negative. Dr. A. G. ANDERSON showed a man, aged 49, who had been sent to him one and a half years previously, on account of a thrombosis of one of the left retinal veins. He weighed 17 st. and had a blood pressure of 210 mm. Hg. Under diet, limiting the carbohydrate element, and small doses of thyroid extract each day the blood pressure came to 145 mm. of mercury and the patient lost 4 st. in weight. He was now able to resume his work as a police sergeant. The point of interest in this case was the presence of a very high blood pressure and a retinal thrombosis, both of which seemed to indicate a bad prognosis, but under the treatment described a remarkable improvement had taken place. Mr. G. H. COLT showed a man, aged 62, who had had an extensive epithelioma removed from the region of the right anterior pillar of the fauces three months before; the neck glands had also been removed. A recurrence of the disease was evident, and the advisability of further treatment, either by diathermy or radium, was contraindicated. Dr. ROBERT RICHARDS showed a specimen of urine from a patient who had had a small burn dressed with 1 per cent. picric acid solution. The urine had been in his consulting room for several months without decomposing; it smelt strongly of phenol, and the patient was at the time acutely ill with the signs of picric acid poisoning. The question of idiosyncrasy was fully discussed; the interesting feature was the resulting picric acid poisoning in a burn of a very small extent.

JAMES MACKENZIE INSTITUTE.

Gall-bladder Disease.

AT the James Mackenzie Institute for Clinical Research, St. Andrews, on November 1st, Professor DAVID P. D. WILKIE (Edinburgh) read a paper on gall-bladder disease and gall stones. After tracing the history of the development of gall-bladder surgery, he described the types of gall stones at present believed to be of metabolic origin: single radiate cholesterin stones, found as a rule in stout females, associated with afebrile attacks of colic, but with little disturbance of health; and the multiple pigment calculi found most typically in acholuric jaundice. In regard to cholecystitis he expressed the view that this disease was almost invariably an intramural streptococcal infection. It was quite the exception to be able to grow organisms from the bile in any but acute cases. The failure of most observers, in this and other countries, to confirm Rosenow's observations was shown to be due to faulty technique, and not to any error in the latter observer's conclusions. Dr. A. L. Wilkie, working in the Surgical Research Department at Edinburgh, had shown that in 85 per cent. of cases of chronic cholecystitis a streptococcus could be grown from the cystic gland, and this organism on experimental inoculation had shown a selective affinity for the gall bladder. The mode of origin of the multiple cholesterin bilirubin calcium stones following an attack of acute cholecystitis was described, and the origin of the multiple mulberry cholesterin calculi following cholesterosis, with lipoid papillomata, was illustrated. In discussing the symptomatology of gall-stone disease Professor Wilkie laid stress on obstruction of the neck of the gall bladder as the most frequent cause of gall-stone colic; on the absence of a muscular coat to the common bile duct, which allowed of the silent residence of a stone in this duct; and on the definite muscular contraction of the gall bladder which might be produced by the ingestion of fat. To the duodenal tube there was ascribed a very limited field of usefulness in diagnosis, for, while in late

cases with infected ducts it gave most useful evidence, in the earlier stages of gall-bladder disease when the infection was intramural it failed to give positive evidence. Of all accessory methods in clinical diagnosis of gall-bladder disease first place was given to cholecystography. The accuracy with which radiolucent cholesterin calculi could be made out, and the advantages of combining cholecystography with a barium meal examination, were demonstrated. In regard to treatment it was contended that drugs, which merely had a disinfectant action in the lumina of the biliary passages, could not be expected to achieve much. Regarding surgical treatment, the removal of the gall bladder, in the wall of which the infection was located, was advocated for every case in which it could be done without undue risk.

DR. CHRISTINA BARROWMAN (Newcastle-on-Tyne) recently gave a lecture at the Glasgow Eye Infirmary on traumatic and acute and chronic inflammatory conditions of the eye treated with ultra-violet rays. The meeting was organized by Dr. John A. Mortimer, and Dr. BALLANTYNE was in the chair. Members of the staffs of the Eye Infirmary and the Ophthalmic Hospital and others to the number of forty attended. Dr. Barrowman claims that her method is unique in that she administers it through the closed eyelids, and remarkable in its success in that scientists hold that there is little penetration of tissue by the ultra-violet rays. The lecture was illustrated by lantern slides of cases, and was followed by much discussion.

Reviews.

RECENT ADVANCES IN OPHTHALMOLOGY.

THE progress of physical science is no better exemplified, so far as medicine is concerned, than in recent advances in ophthalmology. It is true that these advances have been in the main elaborations in the technique of methods of clinical examination rather than in treatment. Ophthalmology has for many years been noted for the exactness of investigation and diagnosis which attends it, and the new methods have enhanced this reputation. The changes of recent years have been admirably surveyed and explained by Mr. DUKE-ELDER in Churchill's Recent Advances Series under the title *Recent Advances in Ophthalmology*.[1] His aim has been to fill the gap between the standard textbook and a bulky and cumbersome periodic literature, and the success of his effort is not in doubt. There are chapters on light, physiological optics, embryology, methods of diagnosis, general physiology, pathology, phototherapy, and neurology. The senior student of ophthalmology, according to his bent, will find the physical side or the pathological and morphological of the greater interest.

Recent correspondence in our columns on the claim of treatment of cataract by ultra-violet rays makes certain passages of special interest. The collected evidence shows that both ends of the spectrum, the ultra-violet and the infra-red, exert a profound effect upon the eye tissues, and that these are not advantageous, and may be destructive.

> "Whenever the cornea is exposed to short-waved radiation within these limits, an *abiotic reaction* occurs after a latent period, the length of which varies with the intensity of exposure, but averages six to eight hours. . . . The histological appearances of the fully developed reaction are characteristic. The surface epithelium shows a swelling and irregularity of its cells, often with the formation of vesicles; after more severe exposures the cells are killed and this layer is desquamated. . . . In extreme lesions the cell proteins are coagulated and an opacity is formed; this later becomes highly vascularized and tends to disappear, leaving a soft, transparent scar.
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> "Heat rays, on the other hand, produce a lesion which is entirely different. The epithelium . . . remains normal . . . the stroma is uniformly hazy and swollen . . . and . . . results in complete destruction of the endothelium. In extreme conditions protein coagulation occurs, and opacities develop which tend to be permanent."

Of effects associated with the lens it is said:

> "Here part of the light gives rise to fluorescence, the region of the greatest effectiveness being in the long ultra-violet from 3,500 to 4,000 A.U. . . . When light passes through a fluorescing substance the particles of the substance become light sources themselves, emitting light of a wave-length differing from the incident light, preponderatingly longer, but sometimes shorter. The effect of this phenomenon is regarded differently. Considering that its production implied absorption, Schanz (1915-22) looked upon it as deleterious. On the other hand, from the work of Burge (1915), who correlated a decrease of fluorescence with an increase in the coagulability of the lens proteins, it may be looked upon as a protective mechanism, whereby the active short waves, which might induce coagulation, are changed largely into long (visible) waves, by which means their energy, being in a more transmissible form, is disposed of more safely."

In the section dealing with morphological and neurological matters we find an admirable summary of recent investigations on the representation of the field of vision in the cerebral cortex, which has been especially associated with the work of Dr. Gordon Holmes and Sir W. T. Lister. It gives in a very brief space a highly instructive account of the observations and of their bearings.

Mr. Duke-Elder is to be congratulated upon the excellence of his book, and on his ability to review and sum up work that has been under investigation for so many years and with changes that are so small that their bearing is apt to be overlooked.

[1] *Recent Advances in Ophthalmology.* By W. Stewart Duke-Elder, M.D., D.Sc., F.R.C.S. London: J. and A. Churchill. 1927. (Demy 8vo, pp. xvi + 343; 73 figures, 4 plates. 12s. 6d.)

HEALTH, ANCIENT AND MODERN.

THE science of public health—or preventive medicine, as it is becoming more fashionable to call it—has within recent years made notable advances in immunology and other fields. Historically considered, it has, as a rule, progressed in a fitful manner, yet a unity of purpose appears to run through it even from ancient days. This essential unity has been well brought out by Sir ARTHUR NEWSHOLME in his work *Evolution of Preventive Medicine*,[2] in which he traces the development of public health from early to recent times. He begins by noting the value of the Greek gymnasium with its wrestling, games, and baths. He refers to the rules of personal and communal health set forth in the Book of Leviticus. He admits that the low standards of personal cleanliness affected by the early Christian church were in part a revulsion from pagan luxury. He speaks of the stimulus given to experimental science by Paracelsus and Roger Bacon, and says that Vesalius and William Harvey struck the death-knell of dogma. He commends Sydenham and his services to medicine, though he does not explain why that robust iconoclast and former ironside fled from the plague of London. His notice of Sir George Baker's essay on the Devonshire colic is of much interest, and Baker's impressive concluding words are quoted.

The author perhaps attributes the decline of leprosy in Europe too certainly to the enforcement of segregation. The treatment of lepers in the Middle Ages was often merciless enough: but, side by side with those sterner measures, there went on the practice of begging by lepers, which brought them about the haunts of men, and another practice, that of begging in lepers' gowns, by poor citizens authorized by city councils to hire the gowns for this purpose. Such freedom could not be strongly conducive to the repression of the disease. It seems quite probable that the prevalence of leprosy was checked simply by the general improvement in standards of living which marked the passing of the Middle Ages. The disappearance of plague from Western Europe at a later date is traced by the author to this kind of improvement, which in this case meant the growth of conditions that "would keep rats out of houses." The replacement of the black rat by the brown, while it may have accelerated the decline of plague, could scarcely have been the primary cause, for the disappearance of plague from Western Europe was well advanced before the brown rat came. Heberden, whom the author thinks eulogistic, is near the truth when he says:

> Our exemption from the plague is not so much to be attributed to any accidental absence of its exciting causes, as to our change of manners, our love of cleanliness and ventilation, which have produced among us, I do not say an incapability, but a great unaptness any longer to receive it.

In the section on sanitation and social improvement the

[2] *Evolution of Preventive Medicine.* By Sir Arthur Newsholme, K.C.B., M.D., F.R.C.P. London: Baillière, Tindall and Cox. 1927. (Cr. 8vo, pp. xv + 226; 6 plates. 11s. 6d. net.)

point is effectively made that the rising standards of conduct in recent years with respect to destitution, cruelty, intemperance, and vice have been a potent aid to hygienic progress. The housing conditions of early modern England are briefly but vividly described, and the degradation of life in the London slums of last century is illustrated from Charles Kingsley. Pitt's window-tax is referred to; we look back on it now with wonder. What public health in Britain owes to the Navy and Army is cordially acknowledged, as it should be. The Irish outbreaks of typhus fever are referred to as historically important. Proper Poor Law relief reduced their prevalence by immobilizing ambulatory cases at home who would otherwise have wandered across the country in search of food or shelter. An account is given of the disappearance of cholera, of Pettenkofer's ground water theory, and of vaccination against small-pox. The work of Charles White of Manchester on the management of pregnancy receives merited commendation. Scurvy is well discussed and also infantile hygiene, and the book closes with a review of the modern public health era with its specific immunizations against disease.

Where so much is admirable criticism is reluctant: but Robert Boyle was a relative of the Earl of Cork, and the account of the plague of emerods of Old Testament story is not in 2 Samuel ii, 3, but in 1 Samuel v and vi.

The author, alike by his wide information and administrative experience and by his sympathetic appreciation of the work of the pioneers, is specially qualified to recount the progress of preventive medicine. It emerges from his narrative that the social and other factors which operated for the control of disease long before the new scientific era dawned may still, by promoting good standards of living, work in the cause of health. This message should fall on attentive ears. The principle which inspires it must guide the policy of all enlightened administrators.

The author refers in his preface to his two winters' work at Baltimore. Another distinguished Englishman, who in 1842 visited the United States for a shorter period, came home and wrote his *American Notes*. In dedicating his book, as he gracefully does, to Dr. W. H. Welch, director of the school of hygiene and public health at Johns Hopkins University, Baltimore, Sir Arthur Newsholme, as the monumental city will recognize, has made a better return than Charles Dickens.

THE HISTORY OF HEART DISEASE.

DR. R. O. MOON, the assistant registrar of the Royal College of Physicians of London, who by his works on the "Relation of medicine to philosophy" (1909) and the FitzPatrick Lectures (1921-22) on "Hippocrates and his successors in relation to the philosophy of his time" has shown that he is a worthy follower of Linacre, the scholar-physician and founder of the College, has now brought out an eminently readable sketch of the *Growth of our Knowledge of Heart Disease*.[3] It begins with Hippocrates and ends with Sir James Mackenzie and Sir Thomas Lewis. As is only meet and right, with the approaching celebration next year of the tercentenary of the publication of the *Exercitatio de Motu Cordis et Sanguinis in Animalibus*, there is a clear account of Harvey's discovery based on deduction and proved by experiment, as laying the foundation stone of physiology, though many years elapsed before any important addition was made to the knowledge of cardiac disease. In fact, up to the time of Raymond Vieussens (1695) who wrote much on the morbid anatomy of cardiac disease and paid minute attention to the clinical picture, the notion that the heart could not be diseased stil persisted.

Senac may be regarded as the first physician to write a treatise solely devoted to cardiac disease in the middle of the eighteenth century. The history of digitalis and angina pectoris, both so closely associated with English names, is outlined, and the influence of the study of physical signs, due to Auenbrugger, Laennec, and Corvisart, is shown. The last named, who was the advocate and popularizer of percussion and the teacher of Laennec, used the word "aneurysm" to mean dilatation of the heart, but insisted on the frequency of cardiac disease, which he regarded as second in frequency only to tuberculosis. Dr. Moon points out that, while in the later part of the last century the detection of organic cardiac disease was much elaborated, the functional efficiency of the heart is now demanding similar attention and elucidation.

[3] *Growth of our Knowledge of Heart Disease.* By R. O. Moon, M.A., M.D., F.R.C.P. London: Longmans, Green and Co., Ltd. 1927. (Crown 8vo, pp. x + 85. 3s. 6d.)

TREATMENT OF THE FEEBLE-MINDED.

THE tenth volume of the Harvard Studies in Education is entitled *What shall the Public Schools do for the Feeble-minded?*[4] It is, of course, an American book, and therefore the "public schools" referred to in the title are what would be called in this country the public elementary schools conducted by the local education authorities. In this volume Dr. GUY PRATT DAVIS, professor of education in the State Teachers' College, Indiana, Pennsylvania, makes a valuable contribution to the subject of the special training and classification of mentally defective children. It is based upon the work of Dr. W. E. Fernald of the Massachusetts School for the Feeble-minded at Waverley. It is truly said that the death of Dr. Fernald in 1920 "robbed the medical and the educational world of one of its greatest benefactors"; for just as Binet worked out a systematic plan for testing the degree of intelligence, so Fernald worked out a systematic plan of scientific procedure for the training of those whose intelligence is found to be below the normal.

Dr. Davis has had the advantage of close association with Dr. Fernald and his successor, Dr. Ransom A. Greene, and his book consists mainly in the detailed exposition of a practical and scientific course of instruction to be followed with the various grades of feeble-minded children. It is thus of prime interest to teachers engaged in such instruction; but it should appeal also to the medical profession, as well as to many others who are interested in the social problems associated with mental deficiency. In accordance with modern conclusions mental deficiency is not regarded as a matter of intelligence merely; emotional and other defects and instabilities are essential factors in the problem. Nor is it now held that every feeble-minded person is a social danger, who ought therefore to be subject to permanent institutional control and segregation. A relatively large proportion of those who are defective in intelligence are socially well behaved if they have had suitable training and have even a slight amount of supervision. Nor is it by any means impossible, given such training and supervision, to make feeble-minded persons economically self-supporting or even profit-securing, though this must always be in the lower ranks of industry and in tasks of a simple and routine character.

A very valuable chapter on "The results of the salvaging process" gives the best sets of statistics on these matters that we have seen. The figures and conclusions of this chapter deserve the most careful attention and consideration. The tables and charts throughout the book are, indeed, all illuminating. As a compendium of present knowledge of the problem of feeble-mindedness, especially in its pedagogic and social aspects, Dr. Davis's book is a most important piece of work.

HEALTHY GROWTH.

SIR ARTHUR KEITH in his preface to *Healthy Growth*,[5] by Dr. ALFRED MUMFORD, medical officer to the Manchester Grammar School, says that the author, by studying the height, weight, chest girth, and vital capacity, "has constructed standard ladders, each rung representing the stage which the average boy reached with each additional year. Having obtained such ladders it was easy to say how many rungs any particular boy was ahead of, or was short of, the average boy in particular directions; the average boy became the pacemaker for all the other members of his year."

"There is much," the author says, "to be said for the use of almost any 'height-weight' index as a standard of nutrition for

[4] *What Shall the Public Schools do for the Feeble-minded?* By Guy Pratt Davis. Harvard Studies in Education, Vol. X. Cambridge, Mass.: Harvard University Press; London: Milford, Oxford University Press. 1927. Demy 8vo, pp. xviii + 225. 15s. net.)

[5] *Healthy Growth.* By Alfred A. Mumford, M.D. With foreword by Sir Arthur Keith, M.D., D.Sc., F.R.C.S., F.R.S. Oxford Medical Publications. London: Milford, Oxford University Press. 1927. (Demy 8vo, pp. xxiii + 348; 29 figures. 16s. net.)

very early childhood, and of the ponderal index as a standard of nutrition for very early adolescence, but when we are considering the physique of adolescent schoolboys we ought to study the dynamic as well as the static factors of healthy life, and indices which test robustness and stamina must include the factor of chest girth."

Dr. Mumford claims that excess or defect in all forms of activity—whether the emotional activity that underlies high moral character, the mental activity that underlies high intellectual attainment, or the physical activity of sports and games—is associated with specialized forms of respiratory activity. "No attempts to ameliorate or remedy defects, or to provide the fullest scope for the proper development and display of excess, will prove fundamentally successful which are not based upon a very thorough knowledge of the respiratory powers."

A research was carried out on the buoyancy of boys in the swimming bath, and then what is termed "the crude buoyancy index" was founded on height, weight, and chest girth, and used for comparing different boys, or groups of boys, one with another; 2,500 cases were tested to establish a mean normal. The athletes were well above the normal, particularly in chest girth and vital capacity. "It was interesting to note that those who obtained high places in long distance swimming rarely obtained high places in running." The test introduced for flying officers by Flack, of sustaining a column of mercury 40 mm. high by the breath, can only, in Dr. Mumford's opinion, be regarded as a test of nerve stability—of the sustained co-ordination of the circulatory and respiratory mechanisms during prolonged effort. A fortnight's holiday raised the average five seconds in each of three classes of thirty boys. Dr. Mumford is now investigating what he terms the respiratory index—the relation of unit of exchangeable air to unit of body volume. There is, he says, "sufficient evidence of a positive correlation between physical growth and intellectual progress for making very ample provision for all the circumstances favourable to body development, especially for more fresh air, physical exercises, recreation, and adequate rest."

While the group of boys who entered for the school leaving certificate examination taken as a whole showed an acceleration in bodily growth above the normal at all ages in all categories, absorption in study for this examination retarded the development of the chest.

"To boys, as well as to masters, these often colossally organized mass examinations are a hindrance to individuality, and readily become a nightmare to overwrought boys. . . . The judgement which selects for commendation the few boys at the top and virtually ignores the others is not only an incomplete, but an unfair summary of the work of the school."

Dr. Mumford is of opinion that of all the different bodily impulses which affect the unconscious mind—raising or depressing the feeling of confidence and well-being—the most important "are those related to muscular tone and balance and external pressure."

"Given good stamina a boy will profit by his educational opportunities and will gradually dominate his circumstances. Given poor stamina, circumstances will too often dominate him. It is then of even more importance to possess standards of stamina than standards of growth, especially when we are dealing with children in attendance at public secondary day schools, where any limitations of bodily activity will exert a particularly injurious influence. The commonest form in which lack of stamina reveals itself in the very young child is the tendency to disturbances of temperature balance—states of feverishness such as are associated with colds and sore throats—or with such disturbances of food transformation as lead to recurrent headaches, bilious attacks, etc."

Dr. Mumford describes three types of boys. The boy who is capable of putting forth marked muscular strength appears to be broad throughout, not necessarily tall, coarse muscled, slow in starting, powerful in execution. The well developed agile boy, who is capable of rapid movement, is broad in shoulder with waist clearly marked. The third type of boy is capable of marked output of energy, but is not usually associated with high physical power and fitness, since he rarely excels in games; yet after adolescence this type is associated with great persistence. Such a boy is usually tall and spare, with muscles of the arms often specialized for some handicraft. His vital capacity generally is high. He is often as childish in some directions as advanced in others. He loses heat easily and needs much food; is easily exhausted and requires plenty of sleep; he retains for a longer time the infantile susceptibility to bacterial invasions, and in his case greater care is necessary to avoid tuberculosis and rheumatic fever than is required for his more robust fellows.

An inquiry into the types of skin of the boys led to the following classification.

The chilblain type, with hands cold and of blue tint; mentally slow, will not make an athlete, and stands exposure to cold badly; best treated by graduated exercises and training the skin to respond to temperature changes.

The fine-skinned warm-blooded type, of spare build and quick heart. Physical and mental activity marked; sexual development slow, easily overtired, but capable of a great temporary output of energy.

The oily-skinned type has thick skin, and the hair may be in excess and curly or coarse. He is short in trunk, broad chested, and often fat; his sexual development is early. He has great mental and physical staying power, resists exposure well, is muscular rather than agile, and is slow in response.

One of the author's conclusions is that under the conditions of a modern day school damage rarely, if ever, occurs to a completely healthy heart as the result of overtraining and exercise. It generally follows incomplete recovery from some minor febrile condition.

"It is painful to see the number of boys who, having at one time been debarred from all physical activity on account of real or sometimes even of imagined heart weakness, continue to be held back from all games, and the proper exercise, which is the real means of amelioration or cure."

In stature, weight, and circumference of chest the present-day average boy of 15 compares favourably with his predecessor of forty years ago.

Of great interest is the account given of an open-air school. At the Greengate open-air school at Salford an attempt is made to stir up the normal process of physical and mental growth of the "inert toddler of pre-school age suffering from under-development and malformation due to rickets, often complicated by serious tuberculization." The ailing child kept in bed may gain in height and to some extent fatten, but the muscles, heart, and respiratory organs need development by exposure to cooling air and exercise, while the rickets require to be met by the action of unfiltered sunlight. At Greengate the children live and sleep in the open air, or in a shed entirely open to the south and with louvres open to the north. There is no artificial heating other than that required to dry clothes and blankets. Warmly clad and well fed, the children do splendidly, and soon come to discard extra clothing.

"Their breathing became deeper; the blood in their skins became richer, and consequently their complexions improved; the catarrhs of the nose and throat, and the feverish attacks lessened and disappeared. Their nerve energy increased and their muscles gained so much in tone and in co-ordination that their distorted bones of arms and legs, now receiving their appropriate strain, were reformed and took on their proper shape."

A teacher was appointed trained in the new educational methods of spontaneous choice, but three restrictions were imposed: the children must not interfere with others, waste time, or destroy. Self-control gradually took the place of control by others. They learned to work as members of a keen happy orderly family. They were able to pay closer attention and to concentrate for longer periods owing to lessening of fatigue. The open-air school must come to be the one for all, and be used as a preventive of illness rather than as a cure.

It is a good thing that the masters of the Manchester Grammar School have been wise enough to back up the services of so excellent a school medical officer, and the evidence he has collected will be widely appreciated.

NOTES ON BOOKS.

A HANDBOOK[6] compiled in the German language by Dr. H. GRIESBACH might from its title be supposed to be a dictionary of medical terms, but it is more than that. The first section (815 pages) might almost be described as a brief explanatory synopsis of terms used in medicine and pathology and for various diseases. The names and dates of the authors prominently identified with advances in knowledge of the several diseases, and a note of what they did, are included. This section is well up to date, and includes much chemical and biochemical information bearing on medical problems. The second section (313 pages) gives brief biographical notes and

[6] *Medizinisches Wörter- und Nachschlagebuch.* Von Hermann Griesbach. Giessen: Alfred Töpelmann. 1927. (4½ × 6½, pp. xxii + 1128. M.20.)

dates of all the authors who are referred to in the first. It makes no pretence to be a complete list of all the names well known in medicine, past and present, but brief biographies are given of many of the great men of science who are dead. In the case of living authors, their names, addresses, present appointments, and work for which they are best known are referred to. The bulk of the names are frankly those of well known German authors, but there is a sprinkling of British, American, and French names. This last part of the book is, however, far from representative, and many well known names are missing. The first section of the book is excellently done, and filled with useful information. The second part might be valuable to English-speaking people in providing the full names and present postal addresses of the bulk of living German workers on medical problems.

In his *Fundamentals of Dermatology*[7] Dr. ALFRED SCHALEK, professor of dermatology and syphilology at the University of Nebraska School of Medicine, has provided students and general practitioners with a clear and concise account of diseases of the skin. The work consists of two main parts. In the first, which is introductory, an account is given of the anatomy and physiology of the skin, and this is followed by a description of the general symptomatology, diagnosis, and treatment of diseases of the skin, to which some dermatological maxims and a classification are appended. The second part, which forms the bulk of the book, contains in alphabetical order a brief exposition of the etiology, pathology, symptoms, diagnosis, prognosis, and treatment of each disease. The text is freely interspersed with illustrations, most of which are original.

The second edition of Dr. FRANK V. G. SCHOLES's work on *Diphtheria, Measles, Scarlatina*,[8] of which the first was published in 1920 and reviewed in our issue for April 24th of that year, has been rewritten and enlarged. The book now contains an account of the Schick and Dick tests, of the Schultz-Charlton reaction, of active immunization against diphtheria by toxin-antitoxin or anatoxin, and the prophylaxis of measles by convalescent serum. The work is of value as representing the experience of one who has had a very wide acquaintance with these diseases, but is by no means exhaustive, as it contains no historical or epidemiological notes. Few references are made to the work of other writers, and there is no bibliography.

The cowkeeper and dairyman will find much up-to-date information in *The Production and Distribution of Clean Milk*,[9] by Mr. A. T. R. MATTICK. The reader is first told that clean milk cannot be produced without light, water, and steam, and is then led through the whole process, from the sanitation of cowsheds and the clipping and cleaning of cows to the distribution of milk in bottles. The systems of bonuses to producers and workers based on the bacterial content of the milk are explained, and tables are given to show the extraordinary improvement obtained by individual farmers. The increasing use of milking machines is noticed, but the producer is warned that any saving in the labour of milking is counterbalanced by the time necessary for cleaning and sterilizing the plant. Mr. Mattick is convinced that with well organized routine it need not take much longer to produce clean milk than dirty milk. Unfortunately, the power to organize is not universal, and the shortage of agricultural labour increases the difficulties of the producer. However, the bonus system of the milk-distributing firms is no doubt helping to improve matters, and their pasteurization of the commodity keeps contamination within reasonable limits.

[7] *Fundamentals of Dermatology*. By Alfred Schalek, M.D. Philadelphia and New York: Lea and Febiger. 1926. (5¼ × 8, pp. xi + 239; 54 figures. 3 dollars.)

[8] *Diphtheria, Measles, Scarlatina*. By Frank V. G. Scholes, M.D., B.S.Melb., D.P.H.Camb. Second edition, completely rewritten and enlarged. Melbourne: W. Ramsay. 1927. (Demy 8vo, pp. 321. 21s. net.)

[9] *The Production and Distribution of Clean Milk*. By A. T. R. Mattick, B.Sc. London: The Dairyman, Ltd. 1927. (5½ × 8½, pp. 76; 25 figures. 2s. net.)

PREPARATIONS AND APPLIANCES.

AN ELECTRICALLY WARMED BLANKET.

WE have recently had an opportunity of examining what is known as a Thermega blanket and of testing its action. It is designed to supersede hot-water bottles and warming-pans and certain electric bed-warmers, which are not without their drawbacks or actual dangers. Thermega is a blanket, the standard size of which is 44 by 32 inches. The material is doubled, and between the folds is placed a flexible conductor, which traverses the space between the surfaces many times before it ends in the attachment where it entered the blanket. It is arranged in parallel lines between 2½ and 3 inches apart, and the length of warmed wire in each blanket is very considerable. The temperature reached is only about 104° F., so that all danger of burns is obviated, and as the conductor is already, as it were, short-circuited there is no risk from any damage to the conductor, which is practically unbreakable. These blankets should be of use for prolonged operations, and in all conditions where it is desirable to use artificial heat in the sick bed. For domestic use as a bed-warmer it is only necessary to turn on the current for one hour before going to bed. The cost of current used per hour at 6d. a unit is said to be only one farthing.

The Thermega patent or patents for the British Empire are held by Thermega Limited, an organization which we understand to be financed and controlled by the Ex-Services Welfare Society, of which Sir Frederick Milner is president. The experiment which is thus being carried out is interesting, for it embodies, probably for the first time, an attempt to find regular work and wages for ex-service men on a strictly economic basis. It was recognized, according to Mr. Kny, who has directed the social-industrial side of the business, that these men could not compete in the open market, but that they might be profitably employed under the protection of a patent. Apart from the psycho-therapeutic side of the undertaking, its "primary object is to pay a living wage to the disabled workers employed, and to produce a balance-sheet showing a profit, which must by statute be utilized for the much-needed extension of the scheme."

For the last four and a half months twenty-four men have been employed in this work at the Frederick Milner Industrial Colony at Leatherhead. Among them are cases of anxiety neurosis, hysteria, and minor degrees of dementia praecox, and Dr. Mapother of the Maudsley Hospital has recently reported very favourably on the effects of their occupation in this work. We understand that the society hopes to acquire other patents, and to extend the scope of its industrial activities in similar directions to this.

Thermega blankets can be obtained of most large stores and surgical appliance firms, or direct from Thermega Limited, 94, Petty France, Westminster, S.W.1.

CORSET BELTS.

Visceroptosis is the cause of so much discomfort and ill health in a considerable proportion of cases that any effective measure for giving relief is welcome. The mechanical problem of affording support to the dropped viscera is not as easy as it might appear on theoretical grounds, and an ill-fitting or wrongly applied belt or corset may aggravate rather than diminish the subjective effects of this condition. On the other hand, the comfort afforded by properly applied support is in some instances almost dramatic, and the resulting improvement in general health is frequently very striking.

Madame Rose of 80, Mortimer Street, W.1, has for many years devoted special attention to this problem, and we have good reason to believe that she has given help and comfort to a considerable number of sufferers. We have received assurances from medical men, who have sent patients to her, that she gives personal attention to each patient, that she takes great care in adapting and adjusting the support to the particular needs of the case, and that she shows herself desirous of complying with the recommendations of the practitioner in charge of the patient.

PEPTENZYME.

Peptenzyme is a product of Messrs. Reed and Carnrick recommended for the purpose of disguising distasteful drugs, and also for the relief of disorders of the digestive system. It contains 16 per cent. of alcohol, and has a pleasant taste that suggests the presence of some volatile oil. It also contains a mixture of the digestive enzymes. The preparation has a pleasant carminative action and appears well adapted for covering drugs which have a nasty taste.

A PORTABLE BOOK-REST.

"Readeasy" is a light and simple form of book-rest, made with an adjustable strap to fit over the shoulders, so that when in use it resembles the tray carried by the itinerant vendor of matches and toys. It is intended to enable invalids to read in bed without the exertion of supporting the book in the hands; but it is equally serviceable for those who are well. The apparatus can be folded up so that it does not take up much room. It could probably be improved by clips for keeping the pages of the book open, thereby leaving the hands free to relieve any slight discomfort caused by pressure of the instrument on the abdomen when a heavy book is being read. The inventor is Mr. H. H. Arnold of 81, St. George's Road, London, S.W.1.

PEN, PENCIL, AND THERMOMETER.

We have received from Messrs. L. G. Sloan (Pen Corner, Kingsway, W.C.2) a sample of what they call a "hospital set," produced by Messrs. Waterman, consisting of a fountain pen, a pencil, and a thermometer, which they suggest would be a suitable Christmas present for a doctor. The three implements are finished in white lacquer, and enclosed in a white case; a white pottery stand to hold all three can also be supplied. We agree that the set is more suitable for a personal present than for hospital use, and a very handsome present it would be. The set can be obtained from dealers in such things; the price is 70s., or with the stand 72s. 6d.

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SATURDAY, DECEMBER 10TH, 1927.

THE TOXAEMIAS OF PREGNANCY.

NOTWITHSTANDING the enormous amount of research and investigation which has been undertaken on eclampsia and the other toxaemias of pregnancy, uniformity of opinion regarding the essential nature of these conditions is still lacking, and so many theories and speculations have been brought forward that eclampsia has been dubbed somewhat derisively "the disease of theories." Much further study and research are needed before this taunt can become obsolete and the etiology of these conditions established on a firm basis. Such research should be based both on a clinical and on a biochemical basis, with the careful correlation of the results obtained in both fields.

The report[1] of Cruickshank, Hewitt, and Couper to the Medical Research Council proceeds on these lines, for it is a clinical and biochemical study of 200 cases of toxaemia of pregnancy and of a series of 42 normal gravidae. The work emanates from the research department of the Glasgow Royal Maternity and Women's Hospital, and the incidence of the toxaemias of pregnancy in Glasgow is shown by an analysis of the figures for the decade 1913 to 1922. The annual percentage of cases of eclampsia among the 23,630 patients admitted during the decade varied from 6.1 to 2.8 of all admissions; this is a higher incidence than is shown by the series of cases collected by Whitridge Williams in America.

Eclampsia is well recognized as a source of maternal deaths, and in Glasgow it was found that the death rate varied from 15.6 to 31.6 per cent., with an average of 22.4 per cent.; though it is apt to be overlooked as a factor in the loss of foetal and neo-natal life, the death rate among the infants of eclamptic mothers was more than three times the general infantile death rate in the hospital. Moreover, in comparison with the figures for unselected cases admitted to the hospital, stillbirth was found to be about three times as frequent in eclamptic cases as in general admissions, while premature birth was also distinctly more common than in an unselected series of control cases. Again, among the infants born alive of eclamptic mothers the death rate was also more than three times the general infantile death rate. Taken together, these figures emphasize in a remarkable way the importance of eclampsia as a cause of loss of foetal and infantile life.

This investigation was approached primarily from the clinical side, and a clinical classification of the cases into four groups was adopted. In the first group the patients had albuminuria of renal origin during the second half of pregnancy, most of them having no other signs of toxaemia. Patients of the second group had symptoms of toxaemia in addition to albuminuria, but had no convulsions, the condition being commonly known as pre-eclamptic toxaemia. The third group comprised the cases of nephritic toxaemia, having albuminuria as the main symptom, but showing in addition signs of chronic renal disease, accompanied in some cases by cardiac involvement. Although this group is not so homogeneous as the others, the authors consider that its retention is justified, seeing that it includes a well recognized variety of toxaemia of pregnancy. Group four comprised cases of eclampsia with definite convulsions of the usual eclamptic type, together with other signs of severe toxaemia.

The results of blood analysis showed such great individual variations that it was often impossible to diagnose the type of toxaemia from these findings alone, and the analysis of the urine had only a limited value on account of the difficulty of obtaining the complete daily output. Nevertheless the general conclusions which the authors have drawn from their observations seem to be that the peculiarities of the blood and urine which characterize the later months of pregnancy are maintained, and may be exaggerated, in all the forms of the toxaemias of the later months of pregnancy; that though there is no definite azotaemia in ordinary cases in any of the varieties studied, moderate nitrogen retention is not uncommon in fully developed eclampsia; and that the hydraemic state of the blood which is characteristic of late pregnancy and the oedema which develops in certain toxaemic cases do not show any demonstrable relation to the chloride content of the blood or to the output of chlorides in the urine.

Tests of the hepatic function have roused much attention of late, and those here investigated include van den Bergh's reaction, Fouchet's test for bilirubin, Ehrlich's aldehyde test and Schlesinger's test for excess of urobilin and urobilinogen, Gmelin's test and the iodine test for excess of bilirubin, Oliver's and Hay's tests for excess of bile salts in the urine, the laevulose tolerance test, the nitrogen partition in the blood and urine, the coagulation time of the blood, the fibrinogen content of the blood, lipase in the blood, Widal's haemoclasic crisis, and glycuronic acid synthesis. The authors' results indicate that none of these tests is of real service in the diagnosis or prognosis of the various forms of toxaemia of pregnancy. Normal gravidae with no clinical evidence of hepatic insufficiency gave a certain proportion of positive results, and in the abnormal cases no correspondence was found between the results of the liver tests and the severity of the clinical manifestations. These results are at variance with those of other recent workers. Thus Berkeley, Dodds, and Walker obtained positive results with some of these tests only in eclamptic patients or in cases so critically ill as to require the induction of premature labour; they suggested that the results of these tests might be taken as a reliable indication as to the necessity of terminating pregnancy in cases of albuminuria. For this suggestion Cruickshank, Hewitt, and Couper can find no justification, and their general conclusion from the study of these hepatic tests is that there exists as yet no sufficiently sensitive and reliable method of examining hepatic function.

Turning to the results of the present investigation in relation to current views on the etiology of the toxaemias, it is pointed out that before entering upon such a discussion it must be kept in mind that true eclampsia does not occur spontaneously in animals, that it has not been produced in its entirety experimentally in animals, although certain features can be produced by the experimental injection of various substances, including more particularly placental tissue extracts. Eclampsia and the allied forms of toxaemia are essentially associated with pregnancy, and do not

[1] *The Toxaemias of Pregnancy: A Clinical and Biochemical Study.* By J. N. Cruickshank, *M.C.*, M.D., F.R.F.P.S., M.R.C.P., J. Hewitt, M.B., Ch.B., and K. L. Couper, M.B., Ch.B. The Medical Research Council's Special Report Series, No. 117. London: H.M. Stationery Office. 1927. Price 4s. net.

occur apart from it, and no experimental condition can be regarded as identical with them unless it is produced in pregnant animals, and does not appear when non-pregnant animals are similarly treated.

The authors have found no clinical, bacteriological, histological, or experimental evidence that the condition is due to any animal or vegetable parasite, or to disturbance of endocrine glands; they think that the cause is to be found in some substances elaborated in the foetal or placental tissues or produced by some disturbance in maternal metabolism resulting from the pregnant state. After these various factors have been thoroughly discussed the conclusion is reached that if the toxaemias of pregnancy have a common cause it is some form of intoxication by the breakdown products of placental tissue, probably some of the higher products of protein katabolism, which, like the breakdown products of lecithin, have a powerful action even when present in small amount. Although they do not mention histamine among these products, it would appear to fulfil these requirements, and it has recently been credited, especially among American workers, with being a possible etiological factor in the causation of eclampsia.

A critical consideration of this report, along with other recent work on this subject, shows that we are still far from having reached any really satisfactory explanation of the causation of eclampsia and the remaining toxaemias of pregnancy, and many and intensive researches will still be needed before such a result can be reached.

LEONARDO BIANCHI: PSYCHIATRIST AND STATESMAN.

NEUROLOGY and psychiatry suffered a great loss by the sudden death last April of Senator Leonardo Bianchi, Emeritus Professor of Nervous and Mental Diseases in the Royal University of Naples, at the age of 80. In a farewell address when relinquishing his chair he said that discipline, obedience, and devotion to the welfare of the community should guide the lives of men: "Duty! Erect an altar to it and let it be your law." In these words Bianchi epitomized his own career. He became assistant physician to the Neapolitan Provincial Asylum in 1882, and director of Palermo Asylum in 1887. His teaching career began in the following year, when he was made professor extraordinary of psychiatry in the University of Palermo. His neurological research work and already considerable contributions to clinical psychiatry led to his return to Naples, where in 1890 he was appointed professor of the psychiatric clinic and superintendent of the provincial asylum, and professor of nervous and mental diseases in the Royal University. He established histological, bacteriological, and physiological laboratories, and before long became the great master of Italian neuro-pathology and psychiatry, an eminence he retained until his death.

For over a quarter of a century Bianchi's genius and commanding personality thus dominated Italian psychiatry. He was an exceptionally good teacher, a clear writer, a brilliant public speaker, and a fascinating conversationalist. His wide sympathies, broad outlook, and close study of the many social problems affecting the welfare of his country, together with his high sense of public duty, brought him into politics, where he reached the highest positions. From a deputy he rose in 1905 to Secretary of State for Public Instruction, and finally was elevated to the Italian Senate. It must have been a unique occurrence for a man to be a university professor, an asylum superintendent, and a Minister of State all at the same time. Bianchi's resignation of his chair at the University in 1923 did not mean a lessening of his activities; on the contrary, he was now able to interest himself more deeply than ever in the problems of eugenics and mental hygiene, and to complete the revision of his famous textbook of psychiatry, the third edition of which appeared in 1924. He also took a keen interest in the legal and administrative aspects of psychiatry, and in 1922 reported to the Italian Legislature on the crying need for reform of the Italian law relating to asylums and the insane. He deplored, as we do in England, the fact that the lunacy laws of his country were inspired by a desire more for the public safety than for early treatment of the mentally afflicted and the administration of asylums on hospital lines. He drove his points home in a great oration before the Senate in 1922, in which he said that the shortcomings of Italian legislation had greatly tended to increase insanity rather than diminish it. He urged the free admission, on purely medical grounds, and not as a result of legal investigations, of early and acute cases into psychiatric clinics and special departments of the asylums, and a revision of the cumbersome method of discharge of patients, which retained far too long in the mental institutions convalescent patients and others fit to be at home.

Bianchi's researches into the anatomy and physiology of the nervous system, his work on aphasia, and his discovery of the presence of bacteria in the blood of some cases of acute delirium, were well known in this country, but the appearance in 1906 of the English edition of his textbook on psychiatry was a refreshing experience to English psychiatry, then rapidly becoming Germanized. Nothing so comprehensive had ever been available in our language. The great advances made in this subject in recent years by the anatomist, histologist, pathologist, bacteriologist, neurologist, psychologist, sociologist, and clinical psychiatrist were all built up into a great biological edifice on the solid foundation of research and clinical experience. No one person has contributed more to this synthesis than Bianchi himself. It was in 1888 that he began his famous experimental researches and clinical observations in regard to the physiology of the frontal lobes, which satisfied him that these were associated with the highest and latest evolved psychic functions, especially the social sentiments. His completed teachings in this relation were published in 1922 in a volume entitled "The mechanism of the brain and the functions of the frontal lobes."

Bianchi's conceptions of life and the relationship of mind and matter are naturalistic throughout. He avoids metaphysical or *a priori* entanglements, and is content to assume the transformation of cosmic into neural energy and its psychic equivalent. What is found in the development of the somatic organism is present also and without substantial difference in the evolution of the psychic organism or mind. Life from the monad to man is a dynamism, and intelligence its subjective side. Thus intelligence is the consciousness of life, and is manifested through the wonderful mechanism of the nervous system. "Psychic life commences with very simple and uncertain manifestations, and step by step, through progressive assimilation of the forces of Nature, it rises to the most potent realization of Nature itself in the forms of thought and consciousness." Like Maudsley and Huxley, he is a worshipper of Nature. He speaks of the infinite

resources of a beautiful and generous Nature which endowed matter with life and mind. The cosmic forces of Nature continue to dominate its highest product, man. The mind is absolutely dependent upon matter, and only reached through matter. Man is therefore merely an instrument of the cosmic forces from which he has evolved. The nervous system changes the cosmic energies into psychic equivalents. The psychic function is engrafted upon the great trunk of organic function and is affected by all its modifications in health and disease. Bianchi thus teaches materialistic monism pure and simple. Neither psycho-neural or psycho-physical parallelism nor interaction has a place in his psychological conceptions. He excludes psychogenic factors in his etiology of mental disorders, except as predisposing to the real causes, which are physiogenic. In the third edition of his textbook he condemns the Freudian doctrines, especially that in regard to the part played by the infantile libido. He regards psycho-analytical methods of treatment as dangerous. Nevertheless, the unconscious mind of Bianchi's psychology is the larger psychic field—it is the great storehouse and laboratory of the mind, and capable also of instantaneous synthesis and new reactions. In this respect, and in many others, he taught as Maudsley taught.

His contributions to physiological psychology and physio-pathology are a greater memorial to Bianchi's genius and work than his clinical psychiatry, though his clinical descriptions are unrivalled. He never attained to so high a position in the world of psychiatry as Kraepelin did, but his net was more widely cast and the catch of greater variety. Like Kraepelin, Bianchi was remarkable for his inspired devotion to scientific ideals in his lifelong endeavour to solve the many problems which psychiatry presents, and he is worthy of a lasting place in our memory.

LATE RECURRENCES OF CANCER.

THOUGH it is obvious that recurrence of a cancer after an operation planned to eradicate it must be due to an incomplete removal of the malignant cells, either because a nest of them is left untouched or because during manipulations some few are dispersed amongst the normal tissues, it is difficult to account for the extraordinary length of time that sometimes elapses before these isolated cells exhibit their inherent proliferative powers. It is generally recognized, in judging the effectiveness of an operation for cancer of the breast, for example, that a period of three years is totally inadequate; even a five-year period is not to be relied on. It is true that, if an individual who has been operated upon survives so long without recurrence, the surgical procedure adopted must be regarded as successful, especially in view of the fact that useful years are added to a life at a time when expectations of living to old age are relatively low; and it may also be true that in an individual who has survived the five-year period the chances of a recurrence manifesting itself grow steadily more remote; but that there may exist a contingency towards recurrences, apparently for the rest of the individual's existence, is not generally appreciated.

The report presented by a committee of the Medical Society of London—published in abstract at page 1082—based on replies by surgeons to a questionary regarding the subsequent history of patients who had survived a ten-year period, is exceedingly valuable, and to some it may be surprising. At one and the same time it demonstrates that freedom from recurrence is the rule after that length of time, while it shows that in quite an appreciable percentage very late recurrences are possible. Hitherto such very late recurrences have been regarded both by clinicians and by pathologists as somewhat rare curiosities, but the report provides us now with information in a more exact form. No one will deny that even the most admirably planned radical operation, according to our present knowledge, depends for its success on a certain amount of luck, with the obvious corollary that the more scientific the operation the more is chance eliminated. From a primary tumour the modes and paths of spread of malignant cells are by no means uniform or entirely known. The lymphatic vessels which may carry the cells are legion, and their distribution is only ascertained as regards the main channels, and then only by composite pictures; the cells may spread in them by isolated and discontinuous emboli with the direction of the lymph flow, or by continuous processes against the stream, and it may be that the stream is not always in the same direction; the cells may reach different sets of lymphatic glands in different cases, and the relays are so numerous that groups are not always invaded in their direct order; some cells may go by way of axillary glands, some through intercostal channels, some downwards along the superficial fascia, some to the other breast, and so on. No one can foretell the particular liability in an individual case; at the best the operator can only form what experience has shown to be an average picture. Further, the cells may be conveyed by way of the blood stream, and their subsequent course cannot be forecast. The chances, then, of some cancer cells escaping the control of the surgeon are very considerable.

In view of the great diversity of paths of dissemination, and the knowledge that isolated groups of cancer cells may lie quiescent for many years without exhibiting their characteristic properties, it may be asked whether at any time a surgical excision of a cancerous breast really succeeds in removing from the economy all the malignant cells. The processes at work that keep the activity of the cell groups under rigid control for so long are only manifest when that control fails. In how many cases is that control maintained? This may be, and probably is, a question without practical value for the moment; but, nevertheless, the definite observation of so many very late recurrences points to the fact that the body has its own defensive mechanisms against malignant cells, and the elucidation of such mechanisms is of absorbing interest to research. Much investigation has been done, but little accurate information has been forthcoming, and, as always when observation has been fruitless, speculations and statements of personal belief hold the field. No purpose is to be served by recounting them. The Medical Society's report fails to correlate the freedom from, or lateness of, recurrence with any observed characteristic. The histological characters of the primary growth do not throw any light on the matter, nor do the microscopic appearances of the late recurrences often reveal any plausible reason for their tardy outburst. Sometimes, indeed, a small and slow recurrent nodule may show a relatively immense amount of dense fibrous tissue imprisoning a few lines of cancer cells, and it is tempting to regard this fibrous tissue as a bulwark set up by the body against the cell proliferation. The undoubtedly good effects of radium or x rays on certain malignant tumours seem to be due in the main to the stimulation of fibrous tissue with its indirect action rather than to selective lethal action on the cancer cells. It is the custom of

some surgeons to subject their cases after breast excision to radiations, in the hope that any few cancer cells left behind may be destroyed thereby. If the rays have no selective action on malignant epithelium the proceeding would seem to be of little value, but if it is hoped that the fibrous tissue may be stimulated to defensive action, then it may not be wholly illusory, though controlled observations on the effects do not tend to confirm the utility of the method. The explanation of the phenomena of late recurrences is bound up with the mysteries of the inherent proliferative properties of tissue cells, properties that all cells possess. Until we know more about the growth property of cells, how proliferation can be stimulated and how it can be checked, no explanation can be satisfying.

HEALTH OF THE SCHOOL CHILD.

THE Chief Medical Officer of the Board of Education, in his annual report, the review of which is begun in this issue, claims, and we think truly, that year by year the school medical service and all that it stands for is winning a larger degree of the public confidence. It is of interest to note what a fruitful vine has sprung from the sowing of some few energetic and inquiring doctors of a previous generation. Sir George Newman claims that his report serves the interests of the local authorities, and, we might add, of medical practitioners also. Members of local authorities cannot always get a view of the whole as distinct from their own part, for often they cannot see the wood for the trees. The report invites them "to behold the extensive vista which lies before them, and to enter the promised land, one where the children of a great race may become their best, a land of perennial youth." Their aim should be "to prepare the child for education and for citizenship." What a great part they have to play in the life of the nation is realized by few. It can be brought home best by the recognition that of all the children in the country between the ages of 7 and 14 years, no less than 90 per cent. are trained in the elementary schools. Between the ages of 9 and 10 the total is as high as 95.3 per cent. In this year's report stress is laid upon the importance of the earliest years of the child's life, and particularly upon what are called "pre-school" years. This is the time when the ground is being prepared, and the susceptible soil of the child's body, within the limits set by heredity, made wholesome or unwholesome, a suitable nidus for the beneficial agents of health and life or for the destructive agents of deterioration and death. When the school medical officers are called upon to begin their oversight of the school child—the entrant of 5 years of age—it is found that "*one-quarter to one-third need medical attention.*" As the quotation from the report of the school medical officer for London puts it, "The school medical service is a receiver of damaged goods and spends most of its time and energies in patching them up." But there are hopeful signs that the school medical work done for and upon a previous generation is bearing fruit, and that there is less ignorance and carelessness amongst the parents. There is certain evidence that the children are to-day stronger, taller, and heavier than the children of 1907. And since "we have been told on high authority that feeding wins more horse races than training," the correlation of the two is obvious.

THE LEAGUE OF NATIONS AND DANGEROUS DRUGS.

IN an annotation in the JOURNAL of October 22nd (p. 746) reference was made to an extraordinary session of the Advisory Committee of the League of Nations on the Traffic in Opium and other Dangerous Drugs. This session was held to consider the situation in regard to "illicit traffic," the proposed "international syndicate of drug manufacturers," and other cognate questions. The report of the committee is now before the Council of the League. It is a somewhat verbose document. It deplores the slow progress with the ratification of the Geneva Convention, and laments that only three of the nations now represented on the Council of the League have yet ratified, while the effectuation of the treaty requires four more ratifications by such States. It had before it reports of eighty-three seizures of illicit traffic, "amounting in the aggregate to tons of morphine and diacetylmorphine in all parts of the world," a disclosure which the American delegate felt to be "infinitely serious." It was stated that "there were, say, forty factories in the world controlled by eight nations," and that if these were effectively controlled and each country discharged its international obligations "the drug problem would be solved." The committee accordingly urges upon the Council of the League the adoption of the principle "that all factories manufacturing dangerous drugs should be owned or adequately controlled by their Governments." This raises a political question of the first magnitude; it recalls the contentions which have arisen in connexion with proposals to nationalize the liquor traffic, and it opens the problem of the identification of the State with a trade admittedly dangerous. The committee appears to have been engrossed with questions relative to the traffic in manufactured drugs, while the more fundamental considerations of the control of the production of opium and the coca plant seem to have been thereby obscured. Signor Cavazzoni, the Italian delegate, who at a previous meeting of the committee had unsuccessfully urged a rationing of the production of dangerous drugs in accordance with what were held to be the principles of the Hague Convention, again urged that the disappointing results were due to the fact that the methods adopted were wrong. He submitted a detailed scheme which he held would "enable all Governments to apply with uniformity and certainty the principles underlying the Conventions of the Hague and Geneva." The scheme, however, appears to have been side-tracked, and, along with the German delegate's suggestion of "a private syndicate of drug manufacturers," was referred to a subcommittee for further consideration.

ROUTINE EXAMINATION OF THE HEALTHY.

IN his Alexander Black Memorial Lecture, the first on that foundation,[1] of which an abstract appeared in these columns,[2] Dr. C. E. Douglas gave an appreciation of the present position of the man in general practice, the family doctor, showing that surrounding him were certain agencies, all undeniably good in themselves, but tending towards his gradual elimination as an important factor in the conduct of medicine. As a corrective of this undesirable tendency some suggestions were made as to lines of activity, some remedial, some preventive, on which he might do sound work that none but he could approach. Of these a somewhat new idea is that indicated by the title of this note. At present no routine examination of the supposedly healthy is generally carried out. This statement requires some qualification, for the school medical officer and the child welfare workers have been for years at work with excellent results. But these do not touch the sources of information at present contemplated. They show, however, the importance of such work, and what we propose to discuss briefly here is its extension into the domain of family practice and the doing of it by the family doctor. It is a commonplace of vital statistics that sickness is relatively greater at both ends of life; and the routine examination of those passing from the prime of

[1] *Edin. Med. Journ.*, October, 1927.
[2] BRITISH MEDICAL JOURNAL, 1927, i, p. 1120.

life, say, beyond 45 years, is also of value. The sensible mother in the educated classes has for many years back taken the family to the dentist whether they have toothache or not, and everyone of any long experience will agree that good has thus been effected. It is only a step from the dentist to the doctor, and she will soon be encouraged to take it. Then, at the other end of life, interesting and important work has been carried out in the United States of America. Dr. Irving Fisher[3] shows that, beginning with Horace Dobell of London,[4] who appears to have been in the sixties a voice crying in the wilderness, the idea of periodical medical examination as a preventive measure has been advocated from time to time; and now, particularly in the service of the Metropolitan Life Insurance Company of New York, results have been gained which will repay consideration. These results, he says, "were so astonishing that the actuarial department and the medical department refused to believe them until forced to do so by going over the records for themselves. The three departments then united in a report showing that, as a consequence of expending 60,000 dollars on medically examining 6,000 people within six years, the Metropolitan had gained, through premiums of people whose lives were extended, 120,000 dollars. In other words, this life insurance company had made 100 per cent. on its investments." In this country the same idea is being worked out as a business proposition in two directions. There is a company which now undertakes the business of insurance against "doctors' bills"—the wording is perhaps unfortunate, though the principle of insurance against the risk of having to pay for medical attendance is a perfectly sound one to which little exception could be taken. But what concerns us more directly in this connexion is the scheme combined therewith in which it is proposed to carry out regular medical examinations under the aegis of a commercial company. Reference to these projects has been made on several occasions in our columns, and we are not now greatly concerned with the precise terms under which such examinations are to be conducted, though these may in time require investigation. The point we would seek to make is that there appears to be no need for the intermediation of a business company at all. Suitable fees, and something in the nature of a standardized examination if necessary, could be organized by the medical profession itself. It may be said that the Metropolitan Insurance Company of New York is an outside body, but the cases are not comparable; the company already has its policy-holders, and it is doing a mutual benefit in this work. But there is no need to restrict such examinations to the holders of life assurance policies. The ordinary man can get his own doctor to examine him at intervals without the formalities of applying to the companies. A word may be said about the possibilities opened up to the less scrupulous members either of the public or of the profession. Cases were not unknown years ago of elderly men making a proposal for life assurance solely in order to hear how they stood in point of health, getting a thorough medical examination for nothing, and then declining to go on with the proposal. Moreover, anyone who has seen that amusing play *Dr. Knock* will be aware of the opportunities placed in the hands of a commercialist who goes in for medicine. But when these possibilities have been discounted there remains the fact that the regular examination of the apparently healthy is coming upon us; that it had been adumbrated many years ago by some of our far-sighted predecessors; that it has been recognized by business men as a business proposition; and that, if the medical profession does not take the matter up and organize it, it will be worked by outside bodies to the exploitation of the great mass of the medical profession—the family doctors.

[3] *Amer. Journ. of Public Health*, January, 1927.
[4] Lectures, Prevention, by Medical Examination, 1861.

LONDON'S MILK SUPPLY.

THE London citizen, as he sits at home enjoying his meals, knows little about the tremendous organization that is required to provide him with his food. Something of the romance of big business, together with the ease and comfort of modern travelling, was demonstrated on December 1st to a party of people who were the guests of the United Dairies Limited and the Great Western Railway Company. The occasion was a visit to the United Dairies depot at Wootton Bassett for the purpose of inspecting the company's new glass-lined tanks for conveying milk by rail. To this depot the milk is brought from farms in the surrounding area in ordinary ten-gallon churns. After samples have been taken for analysis the milk is poured into a trough and conducted to large coolers, where its temperature is reduced to 38° before passing into the tanks. These tanks are huge steel cylinders, to the interior of which a lining of glass enamel has been fused by heat. The cylinder is insulated with two inches of cork, which is protected by an outer covering of thin steel sheeting. The tank is mounted on a special truck made at the railway company's works. One truck conveys 3,000 gallons of milk—a quantity which used to require 300 churns and three milk vans—with a dead weight haulage of 22 tons instead of 80. The tank, when filled, is dispatched to the United Dairies distributing depot at Willesden, where the milk is unloaded at the rate of 150 gallons a minute, pasteurized, and bottled. From the railway point of view there is enormous saving, through the tank system, in sidings, vans, docks with appliances for loading and unloading, and staff. The advantages to the consumer are that the number of handlings of the milk is reduced from six or more to two. The cork-insulated cylinders maintain the temperature of the milk below 40° F. during transit. The distributing centre is reached more quickly. When the tanks are empty they are rinsed with cold water, and the glass surface is thoroughly scrubbed. The interior of the cylinder is then sterilized by steam at a pressure of 30 lb. to the square inch. The tank system of transport seems to mark a distinct advance in the milk supply of London, and is, of course, applicable to other large towns. A depot similar to that at Wootton Bassett has been opened at Calveley on the London, Midland, and Scottish Railway, and other centres are contemplated. The British railways carry 280,000,000 gallons of milk a year. Two-thirds of this is carried by the Great Western and the London, Midland, and Scottish lines; and the United Dairies Willesden depot sends out 46,000 gallons of milk in bottles every day.

THE HOSPITAL SAVING ASSOCIATION.

THE annual general meeting of the Hospital Saving Association, followed by a meeting of group representatives, was held at the Kingsway Hall on November 28th. The meeting of representatives was impressive, as there must have been at least 1,200 or 1,500 people present. In the absence of Viscount Hambledon through illness Sir Alan Anderson was in the chair. The annual report of the association showed that there were now 4,085 groups, consisting of 351,865 contributors, as compared with 3,182 groups, with 267,071 contributors, in 1926. The rate of annual income had increased from £150,000 to £216,000. During the year nearly 100,000 contributors and dependants, of whom 16,000 were in-patients, had been treated at voluntary hospitals on the list of the association. Direct payments to voluntary hospitals amounted to £103,000. Over £9,000 had been paid to rate-aided institutions, and £14,000 had been refunded to contributors treated in hospitals and rate-aided institutions which were non-co-operating. The magnitude of the work of the association was shown by the fact that last year's

payments to the London Hospital alone amounted to £13,685. Sir Alan Anderson pointed out that the work of the association meant the collection of fourteen and a half million threepences, and that the circulation of the association's newspaper, the *Contributor*, now amounted to 75,000. The Lord Chancellor, Viscount Cave, recently elected vice-president of the association, who presided over the Commission on Voluntary Hospitals from which the idea of the association was derived, spoke of the improvement in the financial condition of the voluntary hospitals. He advocated closer co-operation between voluntary, special, and State-aided hospitals and convalescent homes, and gained the applause of the meeting by asserting that the voluntary system must not be impaired, lest the welfare of the sick, the training of medical men and nurses, and the progress of study and research should be imperilled. He considered that deductions from pay by employers was the easiest method of collecting the weekly threepences from the contributors. Professor Winifred Cullis enlivened the meeting by telling the stories of "the movable kidney and the loose liver" and of the "labour-saving device" twilight sleep. She also impressed upon her audience the necessity for remembering that people should not be sent to hospital for illnesses which could quite well be treated by their general practitioners, and that, even under the system of contributors' payments, the services of the medical staffs of voluntary hospitals were given free, so that members of these staffs often put in the equivalent of two days' work a week without remuneration.

THE GENERAL MEDICAL COUNCIL'S INCOME-TAX CASE.

In 1926 two cases of some importance to the medical profession were before the High Court. The Society for the Relief of Widows and Orphans of Medical Men and the Medical Charity for the Society for the West Riding of Yorkshire successfully defended an appeal brought by the Commissioners of Inland Revenue. In those cases the main contentions of the Revenue were based on the fact that medical men were invited to qualify by subscription, and if Mr. Justice Rowlatt had accepted the view that that fact invalidated the claim to exemption on charitable grounds from income tax the decision would have seriously affected the valuable work being done by many similar societies. Recently the same judge has been called upon to decide another case in which the same statutory provisions were involved—we refer to the appeals taken by the General Medical Council and its English Branch Council. On this occasion Mr. Justice Rowlatt's decision is adverse to the professional interests; fortunately it seems less likely to have serious reactions on other cases. A detailed statement as to the constitution and activities of the Councils was, of course, placed before the court, but a very brief reminder of the main facts will suffice here. The Council was established under the Medical Act, 1858, and incorporated under Section (1) of the Medical Council Act of 1862, for the purpose of (*a*) keeping and publishing a *Register* of qualified medical practitioners, (*b*) of exercising oversight on medical studies and examinations, and (*c*) of publishing the *British Pharmacopoeia*. The exercise of these duties, together with the imposition of certain disabilities on unregistered persons, were represented as operating—as clearly they do—for the public benefit, and it was argued that the purposes of the Council were charitable, and that the income received by the Council and devoted to the carrying out of those purposes was therefore exempt from income tax. One of the chief contentions of the Revenue authorities was in effect a transfer of emphasis to the other aspect of the Councils' activities, and it was contended that the Councils were professional institutions whose activities were directed in the main to the interests of the medical profession, and therefore that the claim to exemption as charitable bodies failed. Mr. Justice Rowlatt evidently attached some weight to the consideration that the Medical Act of 1858 did not seem to contemplate the holding of invested funds, but rather that all moneys received would be applied in meeting the expenses incurred in carrying out the provisions of that Act. He held that proof that the objects which the General Medical Council had been established by Parliament to achieve were for the good of the public was not of itself enough to bring the Council's income within the exemption. On the other hand, while he pointed out that it had been established in recorded decisions that societies for the benefit of professions were not societies with charitable objects, he agreed that this case was different, in that the protection of the public was the *main* and not the *secondary* object of the General Medical Council. He had, however, to keep in view the principle that "a body to be a charitable body must come within the analogy of the statute of 43 Elizabeth, cap. 4, which supplied the test." There was no authority for holding that a body such as the General Medical Council fell within that Act, and the appeal therefore failed. We cannot but regret the decision. On the facts the Council appears to us as clearly entitled to exemption on grounds of equity and common sense as, for instance, an educational institution or a religious body, but in such matters the law, judicially interpreted, has the last word—even though it be taken from the dusty pages of an Elizabethan statute. One point may, however, be emphasized. It was admitted that in this case there was no trust for the improvement of the practice of medicine. In that respect, as, indeed, in some others, the position of the General Medical Council was vulnerable at a point in which many professional or semi-professional bodies are particularly strong. As we have said, we regret the decision; we should regret it still more if, through a failure to attach due importance to the special features of this case, the decision were to react unfairly on other deserving cases.

MENTAL HYGIENE.

THE National Council for Mental Hygiene, whose fourth annual report has just been issued, seeks to prosecute an extensive study of the causes of mental defect and disorder, to investigate the sociological background of these disabilities, and to promote their prevention. The improvement of the mental health of the community involves a study of the social habits, of industrial life, and of environment, and the enlightenment of the public in all matters which promote or militate against good mental health. The council aims at securing a more important position for the study of psychiatry in the medical curriculum, the closer association of psychiatry with general medicine, and the establishment of special clinics and out-patient departments for the early treatment of mental disorders. It seeks to raise the standard of care and treatment in the public mental hospitals, and to remove legal formalities which tend to postpone the effective treatment of cases of mental disorder in their early stages. By combating the prevailing ignorance and superstition regarding the true nature of mental disorder it hopes to assist in removing the stigma which handicaps the future welfare of those who have been thus afflicted. Though the measure of financial support received by the council has fallen considerably short of its expectations, it can claim to have carried out a highly creditable amount of work, both in the prevention and alleviation of mental illness, since its inception four years ago. Amongst the urgent needs of the council are the appointment of a paid medical director, the publication of a monthly bulletin, the wide distribution of suitable literature, the giving of popular lectures on mental hygiene, and the organization of research work. Of the two short articles of very real interest appended to this

report, the first deals with the probable causes of mental disorder—a matter which was the subject of investigation by a special committee under the chairmanship of Dr. W. A. Potts, which collected facts from a number of authorities with long experience. The committee insists on the recognition of the interrelationship of body and mind to such a degree that physical causes may be responsible for mental and bodily disorder of many kinds, whilst a psychological cause may be the most important factor in serious disturbance either of body or mind. The importance hitherto ascribed to heredity in the causation of mental disease is considered to have been exaggerated. As knowledge of causation increases, the share of heredity tends, in the committee's opinion, to become more and more restricted. "It is clear," it says, "that heredity is not the basic factor in the cause of all forms of mental abnormality, whether manifested as mental defect, delinquency, or mental disorder." Considerable stress is laid on the necessity of the study of mental hygiene in child life. Special dispositions and characteristics must be guided along healthy channels; the change of feelings and consequent change of behaviour at puberty must be realized and understood, and if necessary explained by the parents. The committee emphasizes the fact that it is the fear, and not the conduct, of life that is the dangerous factor. The committee "advocates no particular psychological creed, but would make available for the developing individual in the nursery, in the schoolroom, at the university, and in the responsibilities of adult life all that modern psychology can offer to help him in his difficulties."

THE GOLD-HEADED CANE AND WILLIAM MACMICHAEL.

The Gold-Headed Cane, a gossipy record of certain prominent physicians of the seventeenth and eighteenth centuries, such as Radcliffe, Mead, Askew, the two Pitcairns, and Matthew Baillie, was first published anonymously on February 24th, 1827, and so deserves some centenary celebration such as Mr. Herbert Spencer Robinson has provided in his bio-bibliographical article[1] containing an account of its modest author, William Macmichael (1783-1839). Macmichael was an Oxford man, of Christ Church, a Radcliffe travelling Fellow, body physician for a year to the Marquess of Londonderry when British Ambassador at Vienna, and was a protégé of Sir Henry Halford. Through Halford's influence he became physician to the Middlesex Hospital, registrar of the Royal College of Physicians, physician extraordinary to George IV, and physician in ordinary to William IV; probably Macmichael obtained much private practice as his patron's substitute in those spacious times, when Halford was President of the College for the "record" period of twenty-four years, from 1820 to 1844. The published works of Macmichael, who was also an anonymous contributor to *The Lives of British Physicians* (1830), which passed into a third edition, have been carefully collated by Mr. Spencer Robinson, who has also been contributing to the same periodical interesting biographical sketches of the Harveian Orators. He has failed to discover a portrait or engraving of Macmichael, even in the collection of the College of Physicians. The first edition of *The Gold-Headed Cane* appeared in 1827, nine days after Macmichael was married. He published a new and enlarged edition in the following year. The second edition is generally regarded as better than the third, brought out by William Munk in 1884. The fourth edition in 1915, the first in America and the first to print the author's name on the title-page, was published by Hoeber of New York, and had an introduction by Sir William Osler and a preface by Dr. F. R. Packard; it was reproduced from the second edition. There had been a symposium on the book at the Johns Hopkins Historical Club in 1906, in which Sir William Osler, Drs. T. McCrae, Cushing, and Futcher took part (*Bull. Johns Hopkins Hosp.*, Baltimore, 1906, xvii, 162-169). Mr. Spencer Robinson's article is so fully documented that it will serve as a useful bibliographical source of reference to those interested in medical history, who, if they cannot pick up the earlier editions, would be well advised to secure the fifth edition, brought out in 1923 by Dr. G. C. Peachey, before it, too, is obtainable only from second-hand booksellers.

[1] *Medical Life*, New York, 1927, xxxiv, 468-488.

MEDALS OF THE ROYAL SOCIETY.

In compiling our list of medical recipients of the Royal Medal of the Royal Society the name of Professor William Kitchen Parker, F.R.S., was inadvertently omitted. Notwithstanding his enormous output of work in comparative anatomy, he was for the greater part of his life engaged in general practice, and is therefore an outstanding example of the possibility of combining most distinguished scientific observations with the quite different daily work of medical practice. Having held the qualification of L.S.A. since 1849, he was in 1873 admitted to the Membership of the Royal College of Surgeons after a merely formal examination, when he was appointed Hunterian lecturer on comparative anatomy. His work on the skull and on birds earned the warm praise of Huxley, and put the latter's conclusions beyond dispute, dealing the final death-blow to Owen's vertebral theory of the skull. In the notice in the *Dictionary of National Biography* Professor G. B. Howes writes: "Such were his stores of anatomical knowledge that he was once known to speak for four hours continuously on the lower jawbone of the raven without saying anything that was other than valuable." It was a certain want of control and arrangement of this extraordinary store of facts which prevented his lectures being as successful as his knowledge should have made them. His contributions, often beautifully illustrated, to the *Philosophical Transactions* and to the proceedings of various scientific societies were well-nigh innumerable.

TREATMENT OF DIFFICULT CHILDREN.

Under the presidency of Sir Humphry Rolleston a council including physicians, magistrates, psychologists, social workers, and representatives of education authorities, universities, and Government departments, has been formed to promote the treatment of maladjusted, difficult, and delinquent children. The immediate aims of this body—to be known as the Child Guidance Council—may be summarized as: the promotion of the establishment of child guidance clinics; the provision at universities of psychological instruction for social workers; demonstration of the need for such trained workers in existing clinics; and investigation of the various social and psychological problems involved. The children concerned are those whose conduct or progress at home or at school reveals abnormalities requiring special treatment; it is admitted that trouble often arises because such children react to unsatisfactory environments. It is hoped that a new child guidance clinic will be established in connexion with some university. Similar work has been in progress in the United States, where, in 1918, the late Mrs. Harkness instituted a Commonwealth Fund, which has since been applied to various causes, irrespective of nationality. This fund will finance the Child Guidance Council until the autumn of 1928, and is contemplating the support of a child guidance clinic for three years. The fund has offered to pay the expenses of certain selected persons visiting similar institutions in the United States, and of five social workers willing to undertake a year's training there. It has also arranged for the secretary of the council to

spend three months in the United States, and to defray the expenses for one year of two social workers in existing psychiatric clinics in England. The British Medical Association is represented on the council by Dr. R. Langdon-Down. The offices of the council are at 24, Buckingham Palace Road, S.W.1, and further information may be obtained from the secretary, Mrs. Beach, at that address.

THE annual meeting of the British Association will be held in Glasgow from September 5th to 12th, 1928, when Sir William Bragg, F.R.S., will preside. Professor C. A. Lovatt Evans, F.R.S., has been appointed president of the Section of Physiology.

DR. JOHN FREEMAN, lecturer in bacteriology, St. Mary's Hospital, Paddington, has joined the Medical Advisory Committee of the Asthma Research Council.

THE BERNHARD BARON PATHOLOGICAL INSTITUTE.

OPENING BY SIR HUMPHRY ROLLESTON.

THE new Institute of Pathology at the London Hospital was opened on December 6th by Sir Humphry Rolleston, Bt., Regius Professor of Physic at Cambridge University. The Institute has been gratefully named after Mr. Bernhard Baron, who has made a donation of £35,000, of which £25,000 is to be a permanent endowment and £10,000 is for building, the latter sum being supplemented by £5,000 from the Rockefeller Foundation. The building, which is on the site of the old Andrew Clark Institute, is located behind the hospital, and consists mainly of four floors. On the ground floor is a *post-mortem* theatre. The first floor contains twelve laboratories for the director and his assistants; the second a large and singularly well lighted lecture and class room to accommodate fifty students; and the third animal and fodder and other working rooms. The laboratories are all provided with every facility for efficient work, all the benches, for example, being fitted with drawers, sinks, gas and electric points, and slate slabs for incubators, and the floors are laid with rubber.

Lord KNUTSFORD, chairman of the hospital, presided over the ceremony, and recalled that at the opening of the Andrew Clark Institute in 1901 he prevailed upon Lord Lister to come and give it his blessing. The needs had far outgrown the facilities offered by that building, and Lord Knutsford, in his humorous way, said that he had been driven to desperation by the importunities of Professor Turnbull, the pathological director, who had even followed him about the corridors of the hospital to impress upon him the need for some provision for pathological work more worthy of the largest hospital in London. At length he went to see Mr. Baron. "I went straight into his office, and he asked, 'What do you want?' That question is superfluous when I make my appearance."

Sir HUMPHRY ROLLESTON, in declaring the Institute open, said that the Andrew Clark Memorial Pathological Institute on the same spot had nobly justified itself since its inauguration twenty-six years ago, but with the advance of medical science the demands made upon it had necessarily increased, and now Mr. Bernhard Baron's generosity had enabled the pathological department at the London Hospital to meet the new requirements. It might not be clear to the public how great were the services so unobtrusively rendered by a pathological institute. Briefly, they consisted of routine examinations, by which the treatment of patients in hospital was greatly helped, the advancement of research, whereby the science and art of healing became more effective, and finally, the education of the future members of the profession. Many contributions to a hospital were ear-marked, from the most charitable motives, in such a way as to exclude from their benefit pathological and other departments, although such departments were integral parts of the hospital. A well equipped pathological department was just as essential for the treatment of patients as was an operating theatre, and the pathologist was the colleague of the clinician and supplemented the clinician's work, or even, as an eminent hospital chairman had remarked, corrected his mistakes. In 1926 nearly 8,000 major operations were performed in the theatres of the London Hospital, and nearly 3,000 specimens from living patients were the subject of microscopical examination and report. Altogether the departments of pathology, bacteriology, and clinical pathology and biochemistry were just as essential to the modern hospital as the radiological department, the operating theatre, and the wards. It was rather strange that radiology, younger in years than pathology, and considerably the junior of bacteriology, was in general recognized as much more closely related to ordinary clinical practice than its seniors. The pathological and bacteriological laboratories should be in the closest structural relationship to one another, and be connected to the wards, for example, by bridges. Not only was the routine pathological examination of specimens from the patients of great benefit to them, but the collection of such results, when carefully analysed, provided fresh knowledge which meant enhanced power in the fight against disease. The accumulation of observations made in a well manned and well equipped laboratory on the insidious structural changes from the normal appearance revealed by the microscope helped in the identification of the causal factor, and thus in the prevention of disease. Sir Humphry Rolleston then spoke of the work of the director of the laboratory and the staff, and mentioned some of the new observations which had issued from this department during Professor Turnbull's tenure of office. He recited a long list of papers which had been based upon the Institute's records, among recent examples the paper by Professor M. Greenwood and Miss Woods on status lymphaticus,[1] and the elaborate paper on heart failure with normal rhythm by Drs. John Parkinson and A. E. Clark-Kennedy,[2] for which the director and one of the assistant directors made the microscopical and histological examinations. There were innumerable other instances, and the speaker himself testified how much he had benefited by the director's generosity. After observing that clinical work and pathology were inseparable, he referred to some of the great surgeons and physicians formerly members of the staff of the London Hospital, several of whom were "pathologists in mind though not in office."

Professor TURNBULL expressed his gratitude to the chairman of the hospital and the house committee, as well as to his colleagues on the medical and surgical staff, for the way in which they had helped and supported him. Outside the hospital, however, it was different. The public lacked appreciation of the services pathology could render. They were willing enough to subscribe to surround the patients' beds with roses, but not to surround them with pathologists. The profession also had not always seen things clearly. When he became director morbid anatomy "stock" was low in the market, simply because people had lost their heads over bacteriology, and had great expectations—not altogether fulfilled—of serology. A very distinguished physician actually "buried" morbid anatomy in the pages of the BRITISH MEDICAL JOURNAL under the title "The passing of morbid anatomy." It was not very encouraging to be told by one's colleagues that one was embracing a lost cause. But there were two men outside the hospital who went out of their way to encourage him. One of them was Dr. Rolleston (as he then was) and the other the late Sir William Osler. Professor Turnbull hoped that this new Institute would prove that morbid anatomy was going all the stronger through having read its obituary notices. He agreed, nevertheless, that morbid anatomy could achieve very little without the other divisions of pathology, bacteriology, and clinical pathology and biochemistry.

Dr. ROBERT HUTCHISON, on behalf of the medical and surgical staff, said that it was in this Institute that their work would be brought to the acid test, and he saw in imagination the roof of the Institute adorned by the figure of its director, like that of Justice on the dome of the Central Criminal Court, holding in one hand the dissecting knife and in the other the recording book.

Mr. BERNHARD BARON added a few words, saying that he rejoiced that the work done there would assist in the great task of the treatment and prevention of disease.

[1] *Journ. Hyg.*, Cambridge, 1927, xxvi, 305-326.
[2] *Quart. Journ. Med.*, Oxford, 1925-26, xix, 113-142.

HEALTH OF THE SCHOOL CHILD.

SIR GEORGE NEWMAN'S REPORT.

THE annual report of the Chief Medical Officer to the Board of Education for the year 1926[1] appears in the form of a letter addressed to the Right Hon. Lord Eustace Percy, the President of the Board of Education, by Sir George Newman, the Chief Medical Officer. This year the letter is shorter than usual, for much of the statistical matter commonly incorporated is now relegated to appendices. Some of the more general aspects of this report are dealt with in an annotation on page 1101. In this review the particular aspects of the year's work will be noted.

Staff.

There are now 1,223 doctors in the service of the various local education authorities; of these, 574 combine such duties with public health work, whilst 263 give their whole time to school work, and 386 are part-time officers. The equivalent in whole-time service is calculated as 611 officers, or one to 8,100 children. In addition there are 865 specialists employed in clinic work, of whom only 14 are whole-time; but of the school doctors some 548 do some form of specialist work. There are 591 school dentists, of whom 263 are whole-time. This works out at about one dentist to 13,500 children, which seems a small proportion considering the work that has to be done. The school nurses, part- or whole-time, number 4,779, which is estimated to be equivalent to 1,821 whole-time.

Medical Inspection.

The work of medical inspection, which is the basis of remedial work, is now judged to have reached a fairly complete stage. Children are examined periodically, at the ages of 5, 8, and 12 years, and at shorter intervals when defects are noted by teachers and others. It is doubted whether advantage would be gained by routine examinations at more frequent intervals; the great majority of serious defects, dental disease excepted, are believed to arise during the earlier years of life, and a large proportion are discovered at the first examination of the "entrants." More exact determination of physical efficiency will develop slowly as more satisfactory and reliable tests are devised, and as careful clinical study is applied to the physical condition of children of school age.

The Results of Medical Inspection.

There is again this year, as last, evidence that the physical condition of the entrant is better than in 1913. There is general improvement of the children at all ages in cleanliness, and the incidence of malnutrition at all ages is substantially less. No indication of general physical deterioration as a result of the coal strike of 1926 has been observed. The school medical officer for London is quoted:

> "The survey of the statistics of medical inspections shows that while there is still much leeway to be made up, while still many children leave school with defects unremedied, there is year by year a notable improvement; this is especially marked in the case of personal hygiene, dental conditions, and visual defect. It also shows that much of the defect is due to causes over which the schools can have no direct control, and that these causes operate most profoundly upon the infant in the pre-school years. . . . The school medical service is a receiver of damaged goods and spends most of its time and energies in patching them up. What is now required is an intensification of social effort directed to the care of the infant in arms and the toddler before school age."

Summing up his evidence, Sir George concludes:

> "I do not think there can be much doubt that the physical condition and capacity of elementary school children throughout the country shows definite improvement (and not the reverse) during the last twenty years. From the data available it seems the child of to-day is stronger, taller, and heavier than the child of 1907. He is a better nourished child. To what is this due? The medical care and supervision of the child before and during school life is producing its effect; better nurture, the remedy of infective conditions which gravely impair physique, school meals, physical training, more fresh air, and improved school sanitation, can scarcely fail in the long run. The direct treatment of ailments and defects removes causes of weakness—less dental decay, less mouth breathing, fewer inflamed tonsils and glands, less tuberculosis and anaemia, a decline in severe rickets. There has also been great reform in the social life of the people, better housing conditions, better feeding, more cleanliness, better clothing, and more fresh air. Heredity is a mighty factor in the building of physique, but the influence of nurture runs it very close, and it has this advantage over heredity that we can control it directly. . . . On the whole the best children physically are the best children mentally; and a sound educational system is not dependent in childhood on improved methods of education only, but on a body nurture, on better feeding, on nervous control and regulation, on a steady growth of bone, muscle, and brain. We have been told on high authority that feeding wins more horse races than training. Feeding is equally important for the child."

Nutrition.

Little regard need be paid, in Sir George Newman's opinion, to the fashionable "stunts" of the present time, or of any time. Some advisers are all for wholemeal bread, others all against sugar, a third group concentrates on vitamins, and a fourth condemns oatmeal. The child needs all of these foods in a varied diet and in reasonable balance. The problem is not the relief of poverty, but the prevention of under-nourishment. The malnourished child is not necessarily the hungry child, nor yet one in a condition of starvation. Sometimes poverty is a direct cause, more often it is ignorance, unsatisfactory home conditions, lack of parental control, and absence of influences favourable to nutrition.

> "It is careless mothering, ignorance of upbringing, and lack of nurture, rather than actual shortage of food, which results in the malnourished child. Insufficient sleep, chronic fatigue, absence of fresh air, and lack of exercise are exerting a very good influence day by day on the well-being of multitudes of children. Magnificent schemes and expensive staffs are of no avail if mothers and teachers neglect these simple matters. Disease is a cause of malnutrition: enlarged tonsils and adenoids, decayed teeth, congenital syphilis, tuberculosis, and the like. Hence to provide more food, or even better food, is by no means the only answer to nutrition."

Remedial Measures.

Progress in school treatment schemes is noted during the year, but there is still room for improvement. Of 317 education authorities, 2 have not yet made provision for dealing with defects of vision, 7 do not provide treatment for minor ailments, 23 have no dental scheme, and 59 are without arrangements for the treatment of enlarged tonsils and adenoids. Orthopaedic treatment is undertaken in less than half the areas. In London there is, it is stated, a steady drift year by year of children from the voluntary hospitals to the treatment centres. This movement is accounted for partially by the popularity of the treatment centres, but still more by the policy of some of the hospitals which seek to relieve the pressure on their out-patient departments by diverting children who apply to them for treatment to the Council's centres.

An essential part of any treatment scheme is the establishment of measures for educating parents as to the need for treatment and to the still greater need for after-care. Such measures include a service for the following up of cases at their homes by school nurses and Care Committees, and for educating the mothers by lectures, talks, leaflets, and personal guidance and counsel. There is evidence generally of a slight but steady improvement in the results of this ancillary work. It is found that it is much harder to persuade parents to obtain dental treatment than anything else. The treatment of squint is engaging the attention of education authorities to an increasing extent. Operative treatment, where necessary, is now provided by 37 authorities. Emphasis is laid on the fact that the earliest possible detection of the condition is essential if serious loss of vision is to be prevented, and satisfactory results are found to accrue from the notification and treatment of cases from infant welfare centres.

Enlarged tonsils and adenoids are found in about 10 per cent. of all school children, and in 5 per cent. it is sufficiently severe to require operation. There is little doubt that in the majority of cases the condition arises before school age. In London, of 10,168 children referred for treatment, 5,724 were entrant infants "amongst whom the greatest proportion of diseased throat conditions is always found." Hospitals are becoming more used for operative treatment than clinics, probably owing to the

[1] *The Health of the School Child.* The Annual Report of the Chief Medical Officer of the Board of Education for the year 1926. His Majesty's Stationery Office. 1927. (Pp. 182. 1s. 6d. net.)

increasing recognition of the importance of in-patient reception and after-treatment. Brighton records the results obtained by operation: Deafness was cured in 51 cases out of 74 (69 per cent.), otorrhoea in 23 out of 33 (70 per cent.), and enuresis in 27 out of 46 (59 per cent.).

(To be continued.)

Union of South Africa.

[FROM OUR CORRESPONDENT IN PRETORIA.]

MOSQUITO SURVEY OF SOUTH AFRICA.

INFORMATION regarding the distribution of mosquitos in South Africa is still remarkably scant. A few investigators have at various times done isolated and purely localized work, but until recently nothing in the nature of a general survey has been attempted. This deficiency in our knowledge of the mosquito fauna is regrettable, in view of the carrying by these insects of malaria and dengue to man in certain parts of the country. From the veterinary point of view, too, definite knowledge is necessary, as culicines are suspected of conveying horse sickness, which annually causes tremendous loss to the country, and has rendered horse breeding in otherwise very suitable districts economically impracticable. Knowledge of the habits of these carriers of disease is necessary, so that destruction may be carried out at their most vulnerable periods. In most parts of this country there is a periodical seasonal diminution in the numbers of mosquitos. Destruction of early broods would therefore yield beneficial results later in the season. The natural tendency, however, is to introduce anti-mosquito measures only when the insects are most prevalent. The desirability of having accurate information has long been realized by the health authorities of the Union, but it has only recently become practicable to commence a systematic survey. Early last year the South African Institute for Medical Research began field work in the Northern Transvaal. While this survey was in progress, sugar planters in Zululand became disturbed at the prevalence of malaria on their plantations, and the Union health department decided that an anopheline survey of that part of the country should be undertaken without delay, in view of the recent railway extensions and the development of cotton growing and other agricultural progress. A conference, attended by representatives of the health department, South African Institute for Medical Research, and the Veterinary Research Division, discussed the practicability of co-operation in a general survey of all blood-sucking flies throughout the country. The survey has, however, had to be limited to anophelines and culicines—the latter mainly for the purposes of the agricultural department. It is being carried out by the entomological department of the South African Institute for Medical Research. A report of the survey of parts of the Northern Transvaal and of the coastal belt of Zululand by A. Ingram, M.D., medical entomologist to the institute, and his assistant, B. de Meillon, B.Sc., appears in the latest publication of the institute (No. xxii, vol. iv). It is a valuable contribution to the problem of dealing with the insect carriers of human and animal diseases in this country.

Northern Transvaal.

The preliminary survey of parts of the Northern Transvaal, commenced in January, 1926, was concerned with the determination of the chief malaria vectors and the location of the haunts of their larvae; a few culicine mosquitos were also collected. The survey was carried out in the districts of Rustenburg, Waterberg, and Zoutpansberg. The parts visited are all situated at an altitude of about 4,000 feet above sea-level, with an average annual rainfall varying between 23 inches in Waterberg and 52 inches in parts of Zoutpansberg. Approximately 90 per cent. of this rain falls during the summer months, October to March. Though records are scant, it would seem that malaria in these parts assumes epidemic form at fairly regular intervals, resembling the outbreaks in the Punjab described by Gill. In the intervals it would appear that the resistance established by the previous epidemic is sufficiently reduced to allow of the disease assuming epidemic form in a season in which an excessive rainfall has occurred in the pre-malarial period. Here, as in the Punjab, excessive rainfall will apparently not result in an epidemic in a population which has had its resistance raised by an epidemic occurring the previous year. The investigators suggest that, given an accurate return of cases of enlarged spleen for the malarious districts and a record of the rainfall during the pre-epidemic period (that is, October to January), it ought to be possible to forecast the occurrence of malaria in epidemic form as is done for the Punjab in India. The anophelines collected during the Northern Transvaal survey were: *A. mauritianus*, *A. squamosus*, *A. gambiae* (*costalis*), *A. pretoriensis*, *A. rufipes*, *A. funestus*, *A. natalensis* (*aureosquamiger*), *A. transvaalensis*, *A. maculipalpis*, *A. rhodesiensis*, *A. theileri*, *A. cinereus*, and *A. longipalpis*. Adult specimens were collected where seen, but the majority of the anophelines obtained were reared from larvae found in bodies of water in the different districts. The recognized carriers of malaria in South Africa are *A. funestus* and *A. gambiae* (*costalis*). No larvae of either of these were, however, found in the Waterberg during September and the first fortnight of October. It would appear, therefore, that active breeding of these two anophelines does not occur in the winter and spring. Further, no adults were found in any of the houses inspected. If these two mosquitos are the carriers of malaria in the Waterberg—as they certainly are in other parts of Africa—it is probable that hibernation of the adults takes place out of doors amongst the grasses, reeds, and shrubs in the vicinity of the watercourses. The investigators strongly recommend the burning of the vegetation in the marshes and along the banks of the rivers in winter.

Zululand.

The Zululand survey was commenced at the end of January of this year. Most of the time was spent in collecting larvae and in examining the conditions and surroundings of the various waters in which they were found. Zululand is situated between latitudes 27° and 28° south. The coastal belt is flat, but inland the rise is rapid to heights of from 2,000 to 5,000 feet above the sea. This belt is intersected by numerous rivers rising in the highlands, and heavy floods are liable to occur in the rainy season owing to the water being impeded in its course to the sea by sand-locked lagoons. At all times there are considerable stretches of marshy ground adjacent to the rivers as they traverse the coastal belt. The average annual rainfall is about 38 inches, of which some 80 per cent. falls in the summer months between October and May—January and February being the wettest months. During the recent outbreak of dengue fever in Durban some unusual breeding places were ascribed to its mosquito carrier, *Aedes* (*Stegomyia*) *argenteus*. The present investigators found no reason to differ from Carter, who states that this mosquito in its larval stage is not found in marshes, sluggish streams, or in any collection of water where at the water's edge there is nothing but mud. Larvae of this mosquito were found in house tanks. Here, as elsewhere in South Africa, the two principal mosquito carriers of malaria were found to be *Anopheles gambiae* (*costalis*) and *Anopheles funestus*. The former was, however, found in this survey to be much more numerous than the latter, and it is probably the chief carrier of malaria in Zululand. It appears to show a seasonal variation in numbers. A record of its prevalence during each month of the year in the malarial districts of Zululand is therefore desirable. Much might be done to reduce the output of anophelines by the periodical removal of floating water plants, which afford shade and protection to the larvae. This, and the clearing of grass and reeds in and about pools, and the draining of the banks of streams in the neighbourhood of houses and native villages, is advocated by the surveyors. Financial reasons will, of necessity, limit the extent of such measures, but they should be carried out within a radius of half a mile of inhabited houses. Segregation of natives, as enforced in West Africa, is urgently called for in Zululand, where the adult as well as the young native suffers from malaria and is a potential carrier. Statistics collected at Matubatuba appear to indicate that the

indigenous race of Zululand has established a certain degree of immunity as compared with the imported races—a fact which may be made use of by the Public Health Department in the future recruiting of labour for the industries of Zululand.

THE SOUTH AFRICAN INSTITUTE FOR MEDICAL RESEARCH, JOHANNESBURG.

The annual report of the director of the South African Institute for Medical Research for the year ended December 31st, 1926, was published on November 3rd. During the year Dr. W. Watkins-Pitchford, who had held the appointment of director of the institute since its inception in 1912, retired because of ill health, and was succeeded by Sir Spencer Lister. The institute is divided into a research and a routine division. Much of the work of the research division reviewed in this report has already been described in these letters. The work included investigations into plague, tuberculosis, heat-stroke in deep-level mines, effects of inhalation of asbestos and other dusts, bionomics of the ectoparasites of rodents, bilharziasis, and such biochemical research as the steady growth of the routine work in the department of biochemistry has permitted.

Plague Infection.

To ascertain how plague infection is kept alive among gerbilles during off seasons between epizootics a series of experiments was carried out in fenced-off runs on the veld. It was found that plague-infected fleas could live without any hosts for periods up to three, and possibly even four months, and still retain the power of infecting fresh hosts. Such longevity, taken in conjunction with the known habit of the gerbille of visiting every burrow in its neighbourhood, may explain how plague infection can be kept going in a scanty rodent population until conditions become favourable for the occurrence of an epizootic. "Tiger River disease," which was found occurring naturally among veld rodents in 1925, was not again met with in the field. Experiments, however, were made with cultures of the causative organism to ascertain its possible use as a virus for the destruction of gerbilles. Food containing the bacilli was found to be very fatal to such rodents as actually ate it, the virus being at least as efficacious as any ordinary poison which had been employed, and some evidence was obtained that the disease had established itself as an enzootic infection. The virus would probably be useful in a gerbille-infested area in which a plague wave was due. A Tiger River disease wave might be made to anticipate and even prevent a plague epizootic. The causative organism of this disease was independently and previously discovered at Cambridge, England, by Dr. E. G. Murray, as the cause of an epizootic amongst rabbits, and named by him *Bacterium monocytogenes*, from its unique character of eliciting a large mononuclear response in the circulating blood of infected animals.

Heat-stroke in Deep-level Mines.

As a result of a series of deaths from heat-stroke in the deep levels of certain gold mines, Dr. A. Mavrogordato, Industrial Hygiene Research Fellow, and Dr. H. Pirow, Government mining engineer, engaged on an inquiry into deep-level mining in relation to high wet-bulb temperatures. The results of their work were communicated to the South African Institute of Engineers, in whose journal it was published (vol. xxv, February, 1927). It was found that many of the working places in the mines had a wet-bulb temperature of 86° F., the level above which temperature control tends to break down in Europeans engaged in physical labour. Cooling of working places presents considerable difficulties. As they are constantly shifting, air which has been cooled at a fixed plant would warm up too rapidly on its way to the more distant working places for a useful fall in temperature to be secured. It was urged that attempts should be made to increase the difference between the wet- and the dry-bulb readings, which was found rarely to exceed 2° F. It was suggested that this might be done by delivering dry air by pipes to the working places, and by attempting to reduce the amount of water used in dust laying.

The Routine Division.

In this division 65,980 investigations were made during the year—an increase of 13,136 over 1925. This increase was largely in investigations of a bacteriological and serological nature, associated with the diagnosis of specified diseases, particularly tuberculosis, syphilis, typhoid fever, and gonorrhoea. In the biochemical department there was a fall of 627 in the number of examinations as compared with 1925, due chiefly to a decrease in the requests for blood sugar estimations. As the number of patients in the two years was almost identical, the decrease in sugar estimations would appear to indicate a growing facility in the use of insulin, and the consequent reduction in the need for laboratory control once the patient's equilibrium has been established.

Hookworm infection with *Ankylostoma duodenale* was found in miners whose blood also showed a marked eosinophilia. Hydatid infection was confirmed microscopically in eight subjects. In four cases the application of the Casoni or hydatid skin test gave a positive reaction which was confirmed on operation; but on two occasions operation following a positive skin reaction revealed the presence of an amoebic abscess in the liver. The reaction is being further tested.

The number of rodents sent in for plague examination was 2,234. Of these the largest number (2,138) were received from the Johannesburg municipality, all of which proved negative on examination for the presence of *B. pestis*. Of the remainder, 9 veld rodents were found harbouring the bacillus.

Evidence of schistosome infection was found in 122 of the specimens, chiefly urinary, of the 432 submitted for examination. *S. haematobium* is the trematode whose ova were most frequently derived from the urinary tract, *S. spindalis* having been found in the urine of only one patient. On six occasions the intestinal form of the disease was confirmed by the finding of ova of *S. mansoni* in the faeces. The wider application in general practice of the Wassermann test is indicated by the marked increase of specimens examined. During the year 10,367 examinations, mostly serological, were made, positive results being obtained in 29 per cent. of the specimens received. To ascertain the incidence of specific infection among native mine workers an extensive investigation in co-operation with the Witwatersrand Native Labour Association has been begun. The blood from over 1,000 unselected natives is being subjected to the Wassermann test. Interesting and reliable data are expected from the results of this investigation. The increased activity in the investigation of tuberculosis is partly reflected in a large increase of specimens, chiefly sputums, received for examination; 18,780 specimens were received. The Weil-Felix test for typhus was applied with 1,120 serums—a decrease of 238 compared with the previous year. During the year 1,260 autogenous vaccines were prepared, and numerous stock vaccines and serums were issued.

India.

MEDICAL TREATMENT IN THE NORTH-WEST FRONTIER PROVINCE.

THE number of patients treated in all classes of hospitals and dispensaries in the North-West Frontier Province has increased considerably, the figures being 1,127,268 in 1926 and 1,078,443 in 1925. The number of surgical operations was also much larger, and there was a fall in the death rate in these patients in comparison with the two previous years. There was no such epidemic of cholera as that of 1925, and an outbreak of plague in Mardan was practically confined to that division. The number of malarial patients increased from 43,967 in 1925 to 46,441 in 1926, but the number of deaths fell. The largest number of major operations was performed in the Egerton Hospital, Peshawar, the Bannu Mission Hospital coming second. The health of the South Waziristan Scouts and the Tochi Scouts continues to improve. The total number of hospitals and dispensaries working during 1926 was eighty-

six—one more than in the previous year. The establishment of two civil dispensaries has been sanctioned and the Provincial Dais Training Centre in Dera Ismail Khan has been completed.

Cholera in Madras.

During 1926 the field work in Madras in connexion with the control of cholera by preventive inoculation and treatment of early cases was continued, with the help of a further grant from the Indian Research Fund Association. In his annual report, Lieut.-Colonel A. J. H. Russell, I.M.S., director of public health for Madras, states that some parts of the Presidency continue to be heavily infected with cholera, but this made it possible to carry on immunization experiments, both with anti-cholera vaccine and with the Besredka cholera bili-vaccine, which is given by the mouth. In order to test the comparative value of these vaccines different groups of individuals in infected villages, and in particular the contacts of cholera cases, were treated; members of the population who refused protection by either vaccine served as controls. Up to September, 1926, the number of cases analysed was 20,000, and the results indicated that anti-cholera vaccine conferred a very considerable degree of protection, the case rate and mortality rate being, respectively, 3.3 and 1.1 per cent., as compared with 18.1 and 6.2 per cent. in unprotected groups. Although too few patients were treated by Besredka's bili-vaccine to permit definite conclusions to be drawn, the figures indicated that this vaccine also conferred a high degree of immunity; the treatment of contacts was continued during the winter, and it is hoped that the statistics now becoming available may make it possible to form a definite opinion. This work was undertaken by the Indian Research Fund Association at the suggestion of the health section of the League of Nations. It is stated that the villagers are much more willing to submit to inoculation than to swallow the bili-vaccine tabloids. Colonel Russell thinks that whenever the purity of rural water supplies is at all doubtful the widest use of a preventive vaccine would seem to be indicated. It is hoped that it may be possible to provide free supplies of anti-cholera vaccine to all local bodies. Acknowledgement is made of the assistance rendered by the Indian Research Fund Association, which has again sanctioned a grant for the employment of a statistical assistant to continue the epidemiological studies on cholera. Papers on this subject have been published in the *Indian Journal of Medical Research*. The hope is also expressed that it may be possible to forecast cholera epidemics two or three months before they occur; the method employed has been tested in other provinces of India as well as in Madras, and has not so far failed in any case. A full report is promised before long on the geographical survey of cholera in the Presidency.

Progress of Vaccination in Bengal.

In a triennial report on vaccination in Bengal for the years 1923-26 Dr. M. E. Sufi, assistant director of public health, commends the adoption of free vaccination by house-to-house visitation by paid vaccinators in place of the old method of licensing such practitioners. This, together with the increased activities of local bodies and the financial help afforded by the Government, enabled the district boards to oppose successfully the quinquennial onslaught of small-pox, which, in consequence, exacted a smaller toll of lives than in the previous quinquennium. Evidence of the arousing of the sanitary conscience of the people generally is afforded by the gradual increase in the number of vaccinations. Dr. Sufi suggests that if the district boards and other local authorities could maintain a large enough staff of qualified vaccinators and supervisors, small-pox epidemics would be abolished. In cases where persuasion has failed, strict legal enforcement of the Vaccination Acts to almost the whole of Bengal, with the preparation of lists of unprotected persons and early notification of the first cases of small-pox, would be valuable as subsidiary factors in the reduction of this disease. In Calcutta a smaller number of vaccinations is recorded owing to the fact that a very large number of people were treated during the previous year in anticipation of the quinquennial epidemic. There has been a great improvement in the number of vaccinations of persons employed in the tea gardens during the year. Lanoline lymph is now being replaced by the more popular glycerin lymph. The quinquennial outbreak of small-pox which started in December, 1924, and continued during the following year, exacted a heavy death roll owing to the prevalence of the disease during the months of April and May, 1925. The outbreak, being of a very severe form, was mostly confined to Calcutta and the neighbouring districts, at least in its early stages; during the previous quinquennium it extended over the Presidency. The spread of the disease in one district was due largely to a constant influx of people from Bhutan, Sikkim, and Tibet. In other areas the outbreak was started by infected persons in Calcutta and Howrah. A timely intensive campaign of vaccination and revaccination cut short the spread of the epidemic to outlying areas. Dr. Sufi praises the activities in this connexion of several local authorities, and urges the appointment in each division of a medical graduate possessing the diploma in public health, and a special knowledge of bacteriological work. He regrets that during last year only about 270 per 1,000 of the estimated number of infants were successfully vaccinated; he attributes this to laxity in the enforcement of the provisions of the compulsory Acts. Vaccination of contacts has been neglected, and the failure of the law to help the local sanitary authorities in undertaking such defensive measures has been the subject of adverse comment by some of the district health officers.

England and Wales.

Sir David Drummond.

In celebration of fifty years' service given by him to the University of Durham College of Medicine, Sir David Drummond, C.B.E., M.D., Past-President of the British Medical Association, was presented at Newcastle on December 1st with his portrait in oils. The painting is by Mr. R. G. Eves, and shows Sir David in the robes of vice-chancellor of the University. The presentation was made by Mr. R. G. E. Mortimer, chairman of the governors, who recalled briefly Sir David Drummond's distinguished career since his appointment as lecturer on therapeutics in 1876. Warm tributes were paid also by Professor Thomas Beattie, who said that as a teacher of medicine and pathology he had earned the lifelong gratitude of a host of practitioners, and by Sir Robert Bolam, who recalled his original work in connexion with empyema, aneurysm, and general paresis. In returning thanks for the honour conferred upon him, Sir David Drummond said that it had been his good fortune to be appointed lecturer in the college just at a time when there was a revival in the teaching of clinical medicine, when Byrom Bramwell and Rutherford Morison were putting life into bedside teaching at Newcastle. Since those days the college had advanced and developed enormously, and now stood among the foremost medical schools in the country. He then invited the College of Medicine to accept the painting, if a place could be found for it among the portraits of those who had given of their best and devoted their lives to it, and Sir Thomas Oliver, as president of the college, gratefully accepted.

New General Hospital for Middlesex.

A new hospital at Edgware, Middlesex, built by the Hendon board of guardians, was opened by the Minister of Health on December 5th. The Redhill Hospital (as it is called, after the name of the old infirmary) has been constructed on most modern hospital lines in grounds of twenty acres. It contains 175 beds, but can be extended to provide three times that number. In includes medical, surgical, and maternity wards, an isolation annexe, administration, receiving, operating, and pathological blocks, and a separate building to serve as a home for the matron and forty sisters and nurses. On the south side of each ward is a paved terrace for beds. The hospital is intended only for the treatment of acute cases; chronic cases will continue to be treated at the old infirmary. Mr. Neville

Chamberlain, opening the building, said that he greatly appreciated the long and carefully directed efforts of the guardians of the Hendon Union in making this noteworthy contribution to the hospital accommodation of the district. Although the prevention of disease was the objective of much effort, treatment—especially of the institutional kind—would remain necessary; it was constantly changing, developing, and branching out in new directions. In a former time medical treatment, while formidable enough for the patient, was a very simple affair, the result of strictly limited resources and ideas. Henry VIII was crippled for years, and ultimately died, on account of an ulcer of the leg for which the medical science of his time could do nothing. Edward VI suffered from what was apparently consumption, but the attendance of the royal physician and of an Oxford professor was unavailing, and finally a female quack was called in, who administered such drastic remedies that the hair and nails of the poor youth were destroyed. Charles II was tortured on his death-bed by fourteen doctors, who dosed him morning and night with concoctions, the least harmful of which was forty drops of the spirit of the human skull. All that belonged to a distant past, but it was only within quite recent years—mainly the Listerian epoch—that the great advances in medicine and surgery had been made. With these had come specialization and the need for special equipment; in order to get the best modern treatment an increasing number of patients had to enter an institution where medical skill and trained nursing could have sufficient scope in suitable surroundings. Another question of importance from the point of view of hospital provision was that the population was not only increasing but becoming more mobile. He was told that in the neighbourhood of the hospital the Watling estate of the London County Council was extending by a thousand new houses a year, and during the last few years there had been an influx of population into the area of the Hendon Union of many thousand people. New houses introduced complications, such as the need for fresh means of transit, additional schools, and extended hospital accommodation. In Middlesex the voluntary hospital accommodation in proportion to the population was considerably below the average for the whole of London, or even for the country; a debt of gratitude was due therefore to the Hendon guardians, who had provided this first-rate general hospital, which, perhaps, would not always be confined to the treatment of the sick poor. The old idea that the rich could be treated in their own homes, the poor in voluntary hospitals, that those who were neither rich nor poor must never be ill because there was no hospital provision for them, and that for the pauper, sane or insane, curable or incurable, there was reserved the workhouse infirmary, was passing away; it was felt to-day that there was no class in the community who should be excluded from hospital treatment. The fact that this new institution was called a hospital and not an infirmary was significant of the tendency for these old distinctions to disappear. A time was coming when every hospital, whether voluntary, municipal, or Poor Law, would play its part in the general scheme of institutional treatment, which should be sufficient to provide for the needs of the population in the area; when that time came this new hospital would be ready to make an important contribution to national health. Sir PHILIP CUNLIFFE-LISTER, President of the Board of Trade, who is M.P. for Hendon, paid a special tribute to the honorary physician of the hospital, Dr. Alexander Findlater, to whose persevering effort, extending over many years, as the prompter of the board of guardians in this matter, the success of the scheme was very largely due.

LONDON SCHOOL OF MEDICINE FOR WOMEN.

The annual dinner of the London (Royal Free Hospital) School of Medicine for Women took place at the Savoy Hotel on December 1st, under the chairmanship of Dr. A. G. Phear, C.B., senior physician to the hospital. Among the company of nearly four hundred were the Dean (Lady Barrett), Sir James and Lady Berry, Sir William Beveridge, K.C.B. (Vice-Chancellor of the University of London), Sir Hamar Greenwood, Sir Milsom Rees, Lord Riddell, Dame Mary Scharlieb, and Sir StClair Thomson. Sir William Beveridge, in proposing the health of the school and hospital, said that there was no medical school in the University of London to whose dinner he more gladly came, for by ties of locality and interest this school was more completely and intimately a part of the University than almost any other. It was also the pioneer school in the training of women for the noblest of all professions. Speaking of the Bloomsbury site, the Vice-Chancellor said that he looked forward to the portion of Bloomsbury acquired by the University of London as the future academic centre of London, as definitely as Whitehall was the centre of government or the City the centre of commerce. The chairman, in responding to the toast, gave an outline of the more important events which had taken place during the year. He made a special allusion to the late chairman of the hospital, Mr. Lengton, in whose death the hospital had sustained a severe loss, for the work of that institution and everything connected with it had been the absorbing interest of his life. The hospital and school had suffered grievously in this way, for the removal of the personality of the late Dean (Dame Louisa Aldrich-Blake) was still fresh in all their minds. Among the staff changes was the appointment of Miss M. Warde, F.R.C.S., a past student of the school, to fill the vacancy caused by the retirement of Dr. Granson. The newest acquisitions on the staff were Mr. Paul Jenner Verrall and Dr. Neill Hobhouse. Since Her Majesty opened the new children's ward during the past summer, Dr. Hazel Chodak Gregory had become the chief of that department. The school was growing from strength to strength, both in learning and athletics, and without attempting to enumerate its successes he owned to some bewilderment at the almost tedious brilliance of its examination results. Miss Dearnley proposed the health of the guests, to which responses were forthcoming from Sir StClair Thomson, with his unfailing budget of humorous stories, and from Lady Greenwood. A former student, Miss Janet K. Aitken, proposed the health of the chairman, remarking that Dr. Phear had first and foremost taught his students medicine. After the speeches the company broke up for dancing.

AN INDUSTRIAL MUSEUM.

Before the war the Home Office had in view the formation of an industrial museum as a permanent exhibition of methods, arrangements, and appliances for securing the safety, health, and welfare of workers in factories and industrial processes. The museum has now materialized, and, after a private view by the King and Queen, was opened to the public on December 5th. It is a two-storied building in Horseferry Road, Westminster. On the ground floor machinery for drilling, printing, cotton carding, laundering, and calendering is shown, in which are many devices for protecting dangerous portions of the machinery, and for instantaneous stopping if a worker is caught in the machine. In the basement there are exhibits showing the principles of efficient lighting in industrial work, and systems of ventilation illustrating the difference between good and bad methods. The portion of the exhibition of most interest to the medical profession is in the gallery on the first floor. Here are shown the results and methods of prevention of such industrial diseases as anthrax, lead poisoning, silicosis, and dermatitis caused by paraffin, benzol, mercury, chrome, sugar, and other substances. This section is illustrated by a series of excellent wax models of skin eruptions, for the preparation of which the authorities were compelled to seek the assistance of craftsmen in Budapest. There are photographs showing such protective measures as washing arrangements and respiratory masks now used in lead and other industries under Home Office regulations. The unbreakable crockery was an attractive and artistic exhibit, but the price of the ware might raise doubts as to its economy in use. The exhibition is interesting in its display of ingenuity in invention, and useful in showing the extent to which the worker is now protected by regulation—very often from his own failure to appreciate the existence of danger. But we hope the object in view was not merely, as we heard suggested, that the worker might learn about the conditions which he has a right to expect in the factory he works in. After

all, there is something in the motto which the late Canon Barnett put in the Toynbee institution: "Duties, not rights."

CENTRAL MIDWIVES BOARD.

The Central Midwives Board for England and Wales met on December 1st, when it considered two resolutions it had received as to the form of ante-natal record issued for the use of midwives. The first was from the County Councils Association, which expressed its concurrence with the view of the Wilts Public Health Committee that, while ante-natal examination is valuable, more harm than good would be done by an attempt to carry out the work in all cases in the manner suggested in the form of record. The Board agreed to consider the point. The other resolution was from the Maternity and Child Welfare Subcommittee of the British Medical Association, which was as follows:

> 1. That it is undesirable that there should be assigned to midwives any duties which can only be properly carried out by a duly qualified medical practitioner.
> 2. That if the ante-natal record form, issued by the Central Midwives Board, is filled in by a midwife the implication is that the case referred to is classified as being safe with regard to any conditions not noted, or even a condition which may be imperfectly noted, and therefore does not require the attention of a medical practitioner, and that such a position is unsafe from the point of view of the patient.
> 3. That all pregnant women should be examined during pregnancy by a fully qualified medical practitioner.

The Board agreed with Clause 1. As to Clause 2, the meaning of which the Board considered obscure, it referred the British Medical Association to Rule E. 20. As regarded Clause 3, the suggestion was agreed to be desirable if practicable.

CHILD DEFECTIVES.

At the end of November a conference was held in London to consider the development of special schools for physically and mentally defective children. It was held under the auspices of the National Special Schools Union, a body founded about a quarter of a century ago to advance the education of such children and to enlist the sympathy of the public on their behalf. Only from 2 to 5 per cent.—in London 2 per cent.—of the school population come within the fold of the special schools, but as the president of the union, Mr. Albert H. Hill, pointed out, the importance of the questions involved in the care and management of these children is out of all proportion to the total number of them. Lord Burnham presided at the opening session, and the London County Council, which daily employs a fleet of seventy special ambulances to carry 10,000 such children to and from school, gave it a special blessing. The Hon. Lady Lawrence, chairman of the Special Services Subcommittee of the Council, received the delegates at the County Hall, where an exhibition of the educational apparatus used at special schools was arranged, and the handiwork of some of the children was on view. The conference lasted three days, and discussions were held on the after-care of the physically defective, the function and the future of day special schools, the bearing of mental deficiency on crime, and the treatment of the rheumatic child. Miss Martineau, J.P., chairman of the Special Schools Committee of Birmingham, expressed the opinion that some children were admitted to special schools whose place ought to be in the dull and backward classes in elementary schools, and that some of too low a grade were sent to special schools for which they were not suited. Dr. Acton-Davis, on the other hand, argued that milder cases ought to be admitted to special schools, and admitted earlier. The subject of crime and mental deficiency was broached by Dr. J. J. Landers, governor of H.M. prison for boys, Wandsworth, who said that 5 per cent. of the remands sent to that institution were certifiable under the Mental Deficiency Act; every child in a special school should be considered separately, and his educational treatment modified in accordance with his special needs. The first signs of delinquency should be recognized in order that they might be suitably treated, and special care should be given to defectives during the adolescent period, which for them, as for the normal child, was the period of greatest strain and emotional instability. Dr. Dingwall Fordyce, certifying officer to the Liverpool education authority, spoke in favour of special residential schools for the rheumatic child. He thought that six months might be taken as about the desirable limit for rheumatic children to remain in hospital, even in the excellent country hospitals with schools attached, and that afterwards—or, in the case of children who had never received hospital treatment for active rheumatism, when they were discovered to be sufferers—they should be sent to a residential institution, primarily a school and only incidentally a place of treatment, for eighteen months or longer. Only by such means could rheumatic children, particularly when coming from a slum environment, be reasonably dealt with educationally and medically. He reminded the conference that rheumatic children could be reared to take their place amongst the world's best workers, that they were potentially energetic and capable citizens, and that, indeed, in many respects the rheumatic diathesis appeared to be the acme of civilization.

THE COMBATING OF DIPHTHERIA IN LONDON.

At the meeting of the London County Council on November 29th a long report was submitted by the Public Health Committee on the question of the Schick test and active immunization against diphtheria. The committee quoted extensively from Dr. Graham Forbes's report, issued under the auspices of the Medical Research Council in the early part of the year (BRITISH MEDICAL JOURNAL, May 21st, page 925), but added that as regards actual experience of active immunization in this country, where it had been adopted in a particular area, the number of children immunized in proportion to the number of susceptibles was so small, and the period during which this preventive measure had been employed so short, that no marked variation in incidence was to be expected; although there was evidence that where the population of institutions, such as staffs of fever hospitals, had been immunized there was a marked diminution in incidence. That there was need for caution in ascribing the remarkable diminution in the prevalence of the disease in New York in 1924-26 to active immunization alone was clear from the fact that during the first six months of 1927 there had been a notable rise both in incidence and mortality in New York City. The committee felt that nowhere as yet had active immunization been carried out with such completeness as to render it possible to draw any justifiable and certain conclusion as to the incidence of diphtheria upon any given community. Having regard to all the evidence so far available, however, "there can be no reasonable doubt that active immunization is now regarded by many prominent members of the medical profession as a valuable preventive measure."

London (the L.C.C. report continued) held an unenviable position both in Great Britain and the whole of Europe in respect to the incidence of and the mortality from diphtheria. From 1911 to 1925 the average attack rate was higher than in any other large city in Great Britain, though it was possible that the figures were exaggerated by the fact that many doubtful cases were notified on bacteriological evidence alone, bacteriological facilities for such diagnoses being more readily available in London than elsewhere, and that in clinical diphtheria London did not compare as badly with other places as might be supposed. The average death rate during the period just mentioned placed London fourth among the large towns of Great Britain, but in 1924—the latest year for which figures were available—the death rate in London from diphtheria was preceded only by that in Edinburgh and Rome among the capital towns of Europe. It was pointed out that the problem of immunization is primarily the concern of the metropolitan borough councils, six of which have initiated centres with facilities for this purpose. "The extent to which the facilities for immunization are made use of in the six boroughs mentioned," says the report, "is directly proportionate to the amount of propaganda and education of the parents which has been carried out." Facilities already existed for school children to be tested and immunized in certain of the boroughs, and would doubtless be extended. Those parents who desired their children to be protected by immunization should be given every opportunity of satisfying their wishes. The suggestion

had been considered that as an experiment, in connexion with selected schools at which diphtheria incidence was high, facilities should be provided for the contacts of diphtheria cases to be inoculated as a preventive measure, but the committee considered that if isolated schools were selected it would be doubtful whether any sound conclusion could be drawn as regards incidence, owing to the fluidity of the school population; moreover, in the present state of public knowledge, the proportion of parental consents would not be high. In Holborn, Deptford, and Camberwell the school organization had already been used for the distribution of leaflets on the Schick test. The conclusion of the committee was that measures for the prevention of the spread of diphtheria were primarily the duty of the borough councils, and that so far as the county council was concerned, it would be premature to introduce any measure of active immunization among school children, even on a limited scale, until further experience had been gained. A further report is to be made in a year's time.

It is evident that the two main considerations which have led the Public Health Committee to this decision are (1) the magnitude of the Council's responsibilities, with the fact that the greater the proposed sphere of action for a relatively new procedure the more needful it is that its efficacy shall not only be proved to the expert but demonstrable beyond all cavil to the laity, and (2) the fact that the metropolitan borough councils are really the responsible authorities in this matter, concerned as they are with the prevention of infectious disease. The six councils named which have already started centres for immunization are the Westminster City Council and the borough councils of Battersea, Camberwell, Deptford, Hackney, and Holborn.

Extension of the Norfolk and Norwich Hospital.

Sir Kingsley Wood, M.P., Parliamentary Secretary to the Ministry of Health, opened, on November 25th, the new out-patient department of the Norfolk and Norwich Hospital, which has been erected on the site of the old department. The main entrance is provided with a large glazed shelter allowing patients to be removed from an ambulance under cover. Out of the well lighted waiting hall open five consulting rooms, each with an attached examination room. Special arrangements are made for the examination and treatment of ear, nose, and throat cases; there is a complete operating block, and a recovery room for patients after minor operations. Accident cases will be treated in a special casualty room. On the first floor accommodation is provided for ophthalmic and dental out-patients, including perimeter, operating, dental, and dark rooms. Sir Kingsley Wood in his speech referred to the foundation of the Norfolk and Norwich Hospital 156 years ago, and said that the Government would do all they could to encourage voluntary hospitals. He did not think that an attitude of pessimism with regard to the health or physique of the nation was justified, in view of the increasing enlightenment of the people generally, the decrease in the mortality of infants and children, and the progress made in medical science.

Scotland.

Royal Infirmary, Edinburgh.

THE report presented to the ninth annual meeting of the League of Subscribers of the Royal Infirmary of Edinburgh by Dr. George Mackay stated that the amount received from various groups of small subscribers was £21,420, a slight increase on the previous year. Edinburgh had subscribed £15,931, and the balance had been collected in country districts, especially in Fifeshire, the Lothians, and the Border counties. Owing to trade depression, a much smaller number of subscriptions had been received in some districts, but this had been more than counterbalanced by the general rise in the number of subscribers. During the year 83 new groups of subscribers had been added, and the league now had a total of 1,418 groups. Since the commencement of the league in 1919 the total sum gathered for the Infirmary had reached approximately £159,000. The report in regard to the working of the Infirmary showed that the number of patients in the wards during the year had been 17,843, as against 17,024 during the previous year. As regarded the occupations of those admitted to the hospital, or the occupations of those whose dependants were admitted, the greatest number were workers in mines and oil works (2,644); trades and crafts furnished 1,536 and general labourers 1,416, domestic servants 980, persons employed in offices 797, and shop employees 758; railway employees numbered 569, motor mechanics 445, building trades 311, and engineering works 339. The number of out-patients continued to increase, the past year's figure being 61,582. Unfortunately there continued to be an extensive list of persons waiting admission, which on November 1st had numbered 1,923 cases. Nothing except an extension of accommodation would relieve this difficulty, which, however, was common to other hospitals in the country. Contrasted with the previous year, almost every item of voluntary revenue showed an increase. The expenditure for the year had been not less than £140,000, an increase of fully £10,000 over the previous year. Referring to the cost of food, it was mentioned that 80,300 gallons of milk had been used, costing £5,300, while the meat and poultry required had cost £4,676. There had been an increasing tendency to substitute fruit as part of the dietary.

The Milk Supply of Cities.

At a recent meeting of the Glasgow University Society of Agricultural Science the question of the milk supply for cities was discussed. Principal W. G. R. Paterson presided. Mr. Alexander Batchelor (Dundee) spoke in favour of pasteurization of milk, and said that he believed no outbreak of infectious disease had ever been traced to milk which had been pasteurized. This process saved life and prevented disease, for in the case of some epidemics the proper pasteurization of a suspicious supply had resulted in the disappearance of the epidemic. General scientific opinion now held that such milk was uninjured in its nutritive qualities. Various authorities in America were quoted to the effect that pasteurization would make unsafe milk safe, and that municipalities should safeguard their milk supply by this means. It was now generally agreed that even the lowest grade of milk should be at least safe. He pointed out that in the city of Edinburgh in 1926 the consumption of the highest grades of milk was 348 gallons daily of certified milk, 253 gallons of Grade A tuberculin-tested milk, and 52 gallons of Grade A milk, but that the total of these amounted only to 2.75 per cent. of the whole daily consumption of milk in Edinburgh, which was 24,000 gallons.

Reports of Asylums.

Rosslynlee Asylum.

The report by the medical superintendent, Dr. J. H. C. Orr, on Rosslynlee Asylum of the Midlothian and Peebles District Board of Control for the period to May 15th, 1927, states that the number of patients on the register at the end of the year was 337, including 12 private patients and 16 service patients. The ages on admission varied from 5 to 85 years. Sixty-six per cent. of the patients admitted were in a weak state of health, and in fully one-third of the cases hereditary predisposition to mental derangement could be traced. Of 43 patients admitted, 17 suffered from melancholia, 10 from mania, 7 from senile insanity, 5 from adolescent insanity, 2 from delusional insanity, and 1 each from idiocy and general paralysis of the insane; the congenital idiot was the child of a mentally defective mother. There were 33 deaths during the year, and in two of these cases the patients had been resident in the institution for forty-two years.

Inverness District Asylum.

The annual report for Inverness District Asylum by Dr. T. C. Mackenzie, medical superintendent, dealing with the year to May 15th, 1927, shows that on that day there were 723 persons on the roll, with an average number throughout the year of 711; the total number of cases treated was 865. The admissions had numbered 148, as compared with 162 in the previous year, and the discharges 74, as compared with 93. Of the patients admitted 32 had been previously

under asylum treatment, and the age at admission varied from 16 to 91 years. Sixty-one cases had suffered from melancholia, 38 from mania, 41 from dementia, of whom 26 were associated with senile decay, 4 had been cases of congenital mental deficiency, and 3 of general paralysis. Dementia praecox accounted for 13 of the 61 cases returned as melancholia, and for 9 of the 38 cases of mania. It thus appears that over one-eighth of all the admissions were for dementia praecox. It is pointed out that as this disease does not cause early death the patients tend to accumulate, so that cases of this type form one of the chief reasons for the periodical necessity of enlarging mental hospitals. With regard to causation, hereditary predisposition to insanity was found to exist in 65 of the 148 admissions, while senility was the assigned cause in 34 cases and alcoholism in 4. Out of the 68 deaths during the year, 9 were due to pulmonary phthisis and 23 to senile decay; these two causes, therefore, were responsible for 47 per cent. of all the deaths. The report includes some valuable remarks upon the observations of the Royal Commission on Lunacy and Mental Disorder, in which the relative simplicity of lunacy law in Scotland as compared with that in England is pointed out.

Ireland.

TRIBUTE TO THE LATE PROFESSOR ADRIAN STOKES.

AT a meeting of the Section of Pathology of the Royal Academy of Medicine in Ireland, held in Dublin at the Royal College of Physicians, the President, Professor T. T. O'Farrell, in the chair, the following resolution was proposed and passed in silence, those present standing.

"At this, the first meeting of the Section of Pathology in the session 1927-28, the Section desires to record its deep sense of loss by the death of Adrian Stokes, which took place in Africa on September 19th, from yellow fever, contracted in the course of his investigation into the cause of that disease. Although he had been for five years Sir William Dunn professor of pathology at Guy's Hospital, his career as a student in Trinity College, as assistant in the school of pathology and later as professor of bacteriology and preventive medicine, and in Flanders during the war years, is well remembered by the Fellows of the Academy, to which he made many contributions. Not alone was he one of the most distinguished of the younger generation of scientific members of the medical profession, giving promise of a brilliant future of research, but he was a great personal friend of many among the profession in Dublin. Professor Stokes in his all too short career shed fresh lustre on Irish medicine and well upheld the tradition of a family for many generations in the forefront of medical and surgical progress. The secretary is instructed to convey to his brother, Henry Stokes, our condolences with the members of his family, our sense of the great loss which medicine in general and pathology in particular has incurred, and our gratitude for the stimulating example of one whom it was an honour to have known."

REPORT OF POOR LAW COMMISSION (NORTHERN IRELAND).

An important meeting of the Tyrone Division of the British Medical Association was held recently in the Tyrone County Hospital. Dr. E. C. Thompson, D.L., chairman of the Division, presided. The first business was the election of chairman and other officers for the ensuing year. Dr. T. Lyle, Newtownstewart, was unanimously appointed chairman, Dr. F. Bradley, vice-chairman, Dr. W. P. Lynch, Omagh, honorary secretary, and Dr. Thompson, representative of the Division on the Central Council. The next business on the agenda was the consideration of the medical referee system, which consists in the examination of insured persons by doctors in general practice who may be in competition with their confreres. This has been objected to by the medical profession in Northern Ireland generally, and six months ago a deputation waited on the Minister of Labour and expressed their dissatisfaction. It was then determined that if dissatisfaction still continued the deputation should have the opportunity of again discussing the question with the Minister. Several of the members expressed their continued dislike of the system, which was unfair to the medical profession and injurious to the interests of the poor. Finally, it was determined to direct the attention of the Branch Council of the Association in Belfast to the question, and to request a further interview with the Labour Minister. A circular from the Medical Secretary of the British Medical Association was read, urging the necessity of local medical health lectures to arouse the interest of the public in matters so closely concerning their own health and interest. The object was approved, but it was considered that there would be great difficulty in organizing such lectures in the absence of public interest. At the request of the Executive Committee of the Division, Dr. L. Kidd, Enniskillen, was present and explained at length the proposals contained in the Poor Law Commission report. The Commission was composed of thirty-seven persons, eight of whom were doctors. It spent three and a half years in taking evidence, and, as far as the medical profession and public were concerned, produced almost word for word the recommendations of the Viceregal Commission, which were pigeon-holed twenty-one years ago. The same fate was likely to attend the present report, since there seemed little enthusiasm for it on the part either of the general public or of the Government. Its chief friends were undoubtedly to be found amongst the doctors, and even they, though they had made many most valuable suggestions, seemed lukewarm. The report recommended the abolition of boards of guardians, chiefly because their duties were divided in matters of public health with the district councils. The county council was to be the chief administrative authority, aided by the dispensary and public health committees. County homes were to replace the present workhouses, and fever hospitals were to be centralized where possible. District hospitals were to be retained and improved. The county hospitals would be enlarged and fitted with necessary modern surgical and medical appliances, and more closely associated with the district hospitals. Dispensary and public health committees would be formed and a medical officer of health appointed with assistants who would look after the sanitation of the schools and children. Sanatoriums should be enlarged and properly equipped; small sanatoriums were unnecessarily expensive. Provision should also be made for the treatment of surgical tuberculosis; at present it was very deficient and unsatisfactory. Dr. Kidd strongly denounced the absence in the report of any mention of a Minister of Health, without whom any attempt at health reform was impossible. If such an official, ably seconded by a department of the Government and skilled doctors, was considered essential in England and Scotland, why not in Ireland? Unless the answer was in the affirmative in the Six Counties the Government might whistle for effective health control. As a matter of fact there was no trained and experienced medical department at present in connexion with the Ulster Government. The question of medical benefits was closely argued and debated by the Commission. It was at first affirmed and then finally withdrawn. Undoubtedly there was considerable support for the idea in the Ulster counties. Dr. Kidd finally suggested that this report should receive the closest attention of the medical profession, and that its considerations should be at once undertaken by the central body in Belfast. Dr. Kidd also drew attention to the form of medical certificates now required by sick jurors. He pointed out that this certificate required for the judge's information the name of the disease and particulars of the origin and symptoms of the affection on account of which the juror was absent. The general opinion was that the requirements of this certificate were iniquitous, and should be resisted. Attention was also drawn to the small fees now paid doctors as witnesses. Dr. Abernethy stated he was offered 14s. for giving evidence before a magistrate in Omagh, and others present gave examples of inadequate payments. Dr. Kidd said that doctors had only themselves to blame for these examples of injustice, and until the profession aroused itself the members might be prepared for further exactions. Dr. Thompson, in conveying the thanks of the meeting to Dr. Kidd, dwelt on the importance of the discussions, and impressed upon the members the necessity of adopting Dr. Kidd's advice to show a greater concern in local affairs, so as to be able to protect, not only their own profession against injustice, but also the wider interests of those who relied upon them in everything relating to the public health of the community.

Correspondence.

DIATHESIS: AN APPRECIATION AND A PROTEST.

SIR,—Whilst yielding to none in the sense of admiration for the brilliant contributions of Sir Archibald Garrod to abnormal metabolism, a word of warning is necessary with regard to the anthropological and statistical approach to diathesis. Anthropology is still "a lucid madness engaged in tabulating its own hallucinations."

The ancient theory of the "humours" has undergone many a subtle paraphrase in the hands of Sigaud, Kretschmer, and others. The classification of Mills in terms of "hypersthenia," "sthenia," "hyposthenia," and "asthenia" had this advantage: it was based on direct radiological observation of a large number of barium meals in relation to bodily habitus, and allowed a non-rigid grouping, which yielded in each group 5, 48, 35, and 12 per cent. respectively. Hurst goes much further and states that the hypertonic and atonic stomach are associated with differences in length and secretion. Are we to infer that this applies to the 5 per cent. and 12 per cent. of Mills, and that the two overwhelmingly intermediate groups are guaranteed against alimentary disease? Hurst stresses the non-pathological range of normal variation, but his followers do not. Moody has shown that enteroptosis, gastroptosis, and coloptosis are non-pathological, and that the powers of emptying the viscera are independent of their position.

Both Brezina and Lebzelter, and Neuer and Feldweg, have recently illustrated the pitfalls of anthropological classification as an index of diathesis, and Brugsch gives a concise history of the various methods. Davenport, in *Body Build and Its Inheritance*, concludes that slenderness of build is associated with tuberculosis, pneumonia, nervousness, and melancholia; fleshiness with diabetes, nephritis, arterio-sclerosis, and numerous diseases of the alimentary tract. Draper, in his study of the fashionable "constitutional medicine" based on less than 300 patients, suggests that there is a typical facies and a typical build for groups of patients suffering from particular diseases. The indiscriminate acceptance of these views lands clinical medicine in the realms of horoscopes and the like.

Jackson has recently published an excellent survey of 1,633 male university students from the point of view of stature, sitting height, weight, chest expansion, vital capacity, pulse rate, systolic blood pressure, and exercise tolerance. It is an apt display of the unimodal curve in relation to bodily habitus; there is no evidence of Mendelian factors as suggested by Davenport, and there is but small correlation between body build and cardio-vascular or respiratory functions. This is a matter of first magnitude in relation to diathesis.

The problem of diathesis can only be solved by studying large numbers. The Ministry of Health and the Board of Education, with twenty years of medical inspection of schools, have the necessary numbers for a comprehensive survey of the norm of physical efficiency, body build, and diathesis in large numbers of different age groups. This would be of prime importance to workers in many fields, for little of real importance has appeared in this country since the report of the Anthropometric Committee of the British Association in 1883.—I am, etc.,

H. A. HARRIS,
(Institute of Anatomy and University College Hospital.)

December 1st.

CATARACT AND ULTRA-VIOLET LIGHT.

SIR,—The letter of Dr. Percy Hall in your issue of December 3rd (p. 1061) on cataract and ultra-violet light calls for comment. Mr. Bishop Harman suggests that this agent probably causes cataract; while Dr. Hall apparently uses it as a method of treating this condition. Such a question can most reasonably be answered by a direct appeal to experiment. I have produced cataract experimentally in animals by radiation, both with infra-red and with ultra-violet rays; nor am I the only one who has done so. These results, and the literature of the subject, will be found in my paper on the pathological action of light upon the eye, published in the *Lancet* (1926, vol. i, pp. 1137, 1188, 1250, and vol. ii, p. 16) where, incidentally, all the matters under controversy are dealt with in detail.

From the theoretical point of view this is merely what one would expect. Cataract is a coagulation of the proteins of the lens; and proteins are coagulated by ultra-violet radiation. The coagulation of proteins is an irreversible chemical change; to talk of this process being reversible (unless the whole of our ideas of the chemistry of proteins are to be revolutionized) is frankly illogical. From the clinical point of view, although ultra-violet light has a very definite and useful place in the treatment of diseases of the eye, any claim to "cure" cataract by radiation of any kind can only be ascribed to inaccurate observation, or to a failure to assess the complicated systemic influences which from time to time may alter the refractive properties of an unstable lens.

It would indeed be well if, in the hands of many, both medically qualified and otherwise, ultra-violet light were employed with more discrimination based on ascertained experimental data, and with less enthusiasm.—I am, etc.,

W. S. DUKE-ELDER, D.Sc., Ph.D., M.D., F.R.C.S.

London, W.1, Dec. 3rd.

TREATMENT OF PROSTATIC ENLARGEMENT.

SIR,—While great progress has been made in the general operative technique of suprapubic prostatectomy since the late Sir Peter Freyer popularized this method in England, the mortality rate has not diminished *pari passu*. The various methods of testing the renal efficiency previous to operation should eliminate cases in which the kidney function is seriously impaired and the chances of recovery thereby correspondingly diminished. Yet, nevertheless, the mortality still remains serious, and the general practitioner has some excuse for pessimism when he hands over his patient to the surgeon; the death rate of 40 per cent. which Mr. Hey Groves calculated from the available statistics of large hospitals in Great Britain is alarming. The test of progress should be the mortality rate. I have always looked upon suprapubic prostatectomy as a special operation requiring in its performance a particular knack or gift which is only acquired by, or bestowed upon, individual surgeons, who eventually specialize in this particular branch of surgery; so long as it is claimed that this operation is part of general surgery the mortality rate will remain where it is. Freyer limited his practice almost entirely to this organ, and his record is still enviable, but those surgeons who specialize to-day in this particular branch will be found to be doing even better. Freyer's mannerisms in the operating theatre were thought by many unduly dramatic, but he had one great characteristic which always impressed me, and that was his attention to the time factor in all his operations upon elderly men; he kept his eye on the clock as well as on his mortality rate.

Elderly men, whether their kidney functions are ideal or otherwise, will not stand prolonged operations, and, however perfect the prostatic cavity may be after operation, the sooner the operation is over and the patient is back in bed the better are the chances of recovery. I have seriously considered this time factor in all cases, and, though I have adopted the open method with its more perfect technique, there can be no doubt that the operation is thereby prolonged. To obviate this disadvantage I have recently used a low surgical diathermy current to arrest the haemorrhage after trimming the neck of the bladder, the current used being merely strong enough to coagulate the blood. This procedure is much more expeditious than ligaturing or stitching the neck of the bladder. It has only been tried in three instances so far, but the results were very satisfactory in that there was no primary or secondary haemorrhage in any of the cases. It is too early to express any definite opinion as to the future of surgical diathermy in prostatectomy, but the benefit so far obtained is sufficiently good to indicate its possibilities, and any method which will shorten the duration of the operation will be of value.

I disagree with Sir Cuthbert Wallace (JOURNAL, November 19th, p. 907) as regards his after-treatment. I consider it essential to irrigate the bladder thoroughly, but gently, twice daily, since this is the only way the prostatic cavity can be maintained clean in the suprapubic operation, unless a catheter is kept in, which is disliked by the majority of patients. I irrigate by Janet's method, through the urethra, as soon as the patient can tolerate it. A clean prostatic cavity after operation lessens the chance of orchitis and epididymitis later.

With regard to sexual function after the suprapubic operation I would refer Sir Cuthbert Wallace to Mr. B. J. Ward's article, "The immediate and remote results in 109 cases of suprapubic prostatectomy by Freyer's method," in the *Birmingham Medical Review* of March, 1908, where it is claimed that in a certain number of cases this function is retained.

Sir Cuthbert's interesting lecture and figures afford clear evidence of the necessity for establishing genito-urinary departments in all our large general hospitals, and for encouraging specialization in this important branch of surgery.—I am, etc.,

London, W.1, Nov. 29th. T. CAREY EVANS.

THE TEMPERATURE IN TUBERCULOSIS.

SIR,—My attention has been called to Dr. Varrier-Jones's little book on *The Significance of Temperature Variations in Tuberculous Disease*, reviewed in your issue of November 19th (p. 940). I do not find it easy to understand why a complicated and expensive mechanism should be suggested for recording the temperature variations in tuberculosis when a clinical thermometer supplies all the information required without any serious inconvenience to the patient. In tuberculosis it is of the highest importance to obtain a continuous record of the variations of temperature, not merely for twenty-four hours, but rather for weeks and months and years, day by day, so that one can watch the activity of the disease closely and carefully in its wearisome progress during the whole period of treatment.

The cumbersome methods advocated by Dr. Varrier-Jones could not be applied to a dozen cases even for a few months; and the information would not be as valuable as the information I have been collecting for thirty-five years with the simple clinical thermometer. But the clinical thermometer must be used in the right way.

I am surprised, also, that Dr. Varrier-Jones should dogmatize upon the nature of the tuberculin reaction without having made, as far as the letterpress shows, any accurate observations. Such accuracy demands that, for diagnostic purposes, the exact amount and variety of the tuberculin used should be definitely stated.

There are numerous varieties of tuberculin, which I have used in literally thousands of cases of tuberculosis; and I have kept temperatures in all my cases, not only for years, but for decades. Long ago I recognized and taught that great care was needed in the measurement of graduated doses, and that anyone experimenting with tuberculin must prepare his own doses. Then only does he know what the dose is, when it was prepared, the form of tuberculin, and even who manufactured it. Many tuberculins on the market are untrustworthy, and chemists are not the best persons for measuring the doses.

Let me cite some illustrations. The dose used by Dr. Varrier-Jones in human beings was T.R. (0.0001 mg.) [*sic*] page 77. T.R. is a fluid preparation and cannot be measured in milligrams. Was this dose weighed? On page 68 we read "the effect of a dose of tuberculin (0.001 mg. of Koch's bacillary emulsion)" [*sic*]. This emulsion also can be measured only by fluid measure. On page 74 we read "After the injection of 0.001 mg. tuberculin a curve was obtained (Fig. 26)" [*sic*], and on referring to Fig. 26 we find the dose recorded is 0.0001. On page 77 we read "resulting from the throwing in of a single comparatively large dose of tuberculin (Fig. 29)." Neither in the letterpress nor on the chart is the amount of the dose stated. Worse still, on page 110 we learn that a dose of 0.000001 mg. of B.E. was given, and, on the strength of there being no "plateau" formation, tuberculosis was negatived.

Such records can only bring tuberculin as a diagnostic agent into discredit.

I venture to say that such a use of tuberculin for diagnostic purposes is ridiculous, and one visit to the Tuberculin Dispensary would prove this. Strange to say, no controls by simultaneous readings of the ordinary thermometer are reported, and no observations of the pulse and weight, nor any mention of track reactions or intracutaneous reactions. These isolated observations by Dr. Varrier-Jones cannot help in the diagnosis of early tuberculosis. Why has he not tried the methods proved to be trustworthy by hosts of authorities, or at least controlled his own procedure by observations according to established methods?

On the other hand, in describing experiments upon bovines which were being tested with tuberculin Dr. Varrier-Jones states, page 86, line 4, "after a twenty-four-hour record had been obtained, 6 c.cm. [*sic*] of tuberculin was injected subcutaneously." Why is tuberculin, used for bovines, properly measured in cubic centimetres, and that used for human beings measured in milligrams? Further, on whose advice was 6 c.cm. injected into a calf for test purposes? Moreover, surely the form of tuberculin used should be stated. If such a system of dosage were practised, tuberculin had better be left severely alone.

Dr. Varrier-Jones advocates the rectal temperature, and that only, as reliable. Thirty-five years' constant use of mouth temperatures taken by patients with special directions, every two or four hours, leaves very little to be desired in gauging the differences of temperature upon which, without or with tuberculin, success in diagnosis, prognosis, and treatment essentially depends. I can furnish stacks of evidence of the truth of this apparently bold statement, and I believe that anyone who has worked with me at the Tuberculin Dispensary for a sufficient length of time will support me on this crucial question.—I am, etc.,

W. CAMAC WILKINSON, M.D.
Director, Tuberculin Dispensary,
32, Fitzroy Street, W.1.

November 21st.

RISKS OF LIGHT THERAPY.

SIR,—The lack of sunshine during our winter months has led to an increasing demand for irradiation of the skin with artificial sources of ultra-violet rays. It is necessary to realize that many of the lamps employed for this purpose emit ultra-violet rays which differ in quality and quantity from the sun's rays. Professor Leonard Hill has shown that the biological action of the sun's rays are due to the ultra-violet rays 3,300-3,000 A.U. The long-flame arc and the quartz mercury vapour lamp have their maximum biological action from ultra-violet rays shorter than 2,970 A.U. which are absent in the sun's spectrum. The results of my experiments have led me to adopt a specialized technique of treatment which I have called "short-ray therapy," in contrast to the Finsen technique which is adopted at the Copenhagen Light Institute. Further research may finally determine the relative value of each form of therapy, and will decide when sun, Finsen, or short-ray therapy is indicated. But at the present moment it is imperative to realize that when short-ray lamps are employed, emitting ultra-violet rays shorter than 2,970 A.U., the principles of short-ray therapy should be adopted.

The danger of over-exposure has resulted from the confusion of principles and the misconstruction of technique. In this country the normal white skin is very sensitive to short ultra-violet rays from 2,970-2,500 A.U., and the reactions of the skin resemble those of the irritants and endothelial cell poisons. From this point of view I would urge that short-ray therapy should be controlled and entrusted to the clinician who is fully trained to understand the correct application of light therapy. For "home use" and general treatment lamps emitting ultra-violet rays 4,000-3,000 A.U., which are similar to the extent of the ultra-violet rays of the sun, should only be employed. This can be obtained by the use of carbon arc lamps containing vita-glass screens, quartz mercury vapour lamps with frosted vitreosil screens, or mercury vapour lamps made of vitreosil. The abuse of light therapy by unskilled and badly trained workers and a campaign of wrongful propaganda have led to a "commercialized sunlight" which threatens to endanger the true principles of actinotherapy.—I am, etc.,

National Institute for Medical Research, Hampstead, London, N.W.3, Dec. 4th. ALBERT EIDINOW.

ULTRA-VIOLET RADIATION AND VARICOSE ULCERS.

SIR,—I entirely agree with Dr. Weinbren regarding the value of ultra-violet irradiation for varicose ulcers. Even with small recent ulcers it is the quickest way to heal these, to tone up the flabby tissues, to increase nutrition, and thus to prevent recurrence. In large chronic ulcers that have resisted all measures it is still the best way. Technique here, however, is all-important, and results will never be achieved if the treatment is left to nurses and masseuses; it needs constant medical supervision.

Failure is due, I think, to a want of discrimination between the effects of different sources of light. I have had uniformly good results in the light department at St. Mary's Hospital. As these ulcers are all septic the first thing is to use the bactericidal power of light on the ulcer itself by a few short, sharp, stimulating radiations with a source of light rich in the shortest ultra-violet rays —a fairly new mercury vapour lamp at a distance of 40 cm. for three minutes, or a Kromayer at 20 cm. for two minutes. This causes an outpouring of serum, which cleanses the wound and removes fragments of dead tissue. Two or three applications are enough completely to alter the appearance of the ulcer. To continue strong radiation after this is wrong, as the delicate new granulation tissue is seriously damaged by powerful actinic rays. We now need the germinative and keratotic power of light for the ulcer, so rays of a longer wave-length are indicated for this and to increase the nutrition of the surrounding tissues. If another source of light is available, such as an iron or a carbon arc with metal core, containing the longer ultra-violet and the more penetrating yellow, blue, and infra-red rays, ten to fifteen minutes' treatment can be given with these, at a distance of about 60 cm. If not, the same mercury vapour lamp can be used in combination with the solux or other source of infra-red rays at a distance of 100 cm. Under this treatment chronic serous infiltration of the surrounding parts disappears, also the pain and irritation. The ulcer loses its torpid character, and vigorous granulations replace the dirty sloughing base. The indurated edges flatten, and epithelization takes place more quickly than by any other method.

The third stage is treatment of the whole leg until good pigmentation is achieved. Excessive stimulation must be avoided if there is any sign of thrombo-phlebitis. Later on the doses can be raised until hyperaemia appears as a faint red-bronze tint showing through the pigment. It is, of course, essential to support the tissues by an elastic bandage from toe to knee, over the dry gauze dressing and soft bandage. Parathyroid in small doses is helpful.

The same technique can be adopted for the deep perforating ulcers of tabes, on the sole or toes.—I am, etc.,

JUSTINA WILSON, M.R.C.P.Ed.,
D.M.R.E.Camb.

London, W.1, Nov. 15th.

SIR,—Dr. Weinbren (November 12th, p. 900) draws attention to the wide divergence of opinion among dermatologists as to the value of actinotherapy for varicose ulcers. Evidence in favour from another country is useful, so I will mention how Dr. Saidman of the Institut d'Actinologie, Paris, demonstrated to me a case of varicose ulcer of twenty years' duration, in the final stages of healing with ultra-violet therapy. That case alone fully justified an optimistic prognosis even in apparently hopeless cases of chronic varicose ulceration.

Besides its general tonic effect, now generally accepted, the local application of ultra-violet light stimulates diapedesis, as can be demonstrated easily by its dissipation of the swelling, pain, and discoloration of a bruise; therefore ultra-violet therapy appears to be the treatment of choice to apply on and around the ulcerated varicose area, as it will antagonize the condition of venous stasis.

That it will stimulate the growth of epithelium is proved by its use successfully in the treatment of a burn with molten lead containing arsenic—a burn made all the more severe because the molten metal ran inside the upper of a boot and was thus some time in contact with the skin; the destruction of tissue was more extensive in area and in depth than in a varicose condition, yet healing took place without grafting.

In the treatment of varicose ulcer with ultra-violet light the patient will be grateful for the relief of pain and irritation, which is a feature of the process of healing under these rays; but more remarkable still, in my opinion, than its success in the treatment of superficial varicose ulcers or burns are the results obtained in gastro-intestinal conditions which present the classical signs and symptoms of chronic ulceration; with eight to twelve treatments the patients lose pain, discard their milk or light diet, and eat "what is on the table"—that is, pork, oven pie, bloaters, tinned salmon, and pickled onions—with relish and benefit, as is evidenced by improved colour and increase in weight.

Scientists tell us there is little penetration by the ultra-violet rays, and I attempt no explanation here of how this beneficial action takes place, but to me varicose ulcers present an easy problem compared with those other ulcerative conditions mentioned.—I am, etc.,

CHRISTINA BARROWMAN.

Newcastle-on-Tyne, Nov. 13th.

SIR,—In a letter in your issue of November 12th (p. 900) commenting on the discussion on ultra-violet light treatment of skin conditions at the Annual Meeting of the British Medical Association in Edinburgh, and the divergence of opinion among dermatologists as to its value, the writer quotes, amongst others:

Prurigo (*Adults*).—Dr. Gardiner: Aggravated. Dr. W. J. O'Donovan: Improved.

As one who was present at the meeting in Edinburgh, the question which at once presented itself was, to what form of prurigo did those who took part in the discussion refer when they spoke of "prurigo (adults)." Discrepancies in results are readily explicable on the assumption that different types of "prurigo" in adults had been treated, apart from any consideration of the method employed.

The importance of a standard technique in comparing results is recognized, but at the same time where large numbers of patients are treated by an adopted "standard technique" it is a matter of common observation that there is marked variability in the individual response to ultra-violet radiation. The true value of actinotherapy will only be assessed when numerous, detailed clinical records are available, and when every other contributory factor has been carefully considered.—I am, etc.,

ELIZABETH HUNT, M.D

Liverpool, Nov. 22nd.

BRILL'S DISEASE.

SIR,—I am sorry to see the term "Brill's disease" used in the note (December 3rd, p. 1044) respecting the epidemic fever which has been prevalent in Marseilles and its neighbourhood. I am sorry for two reasons. The first is that "Brill's disease" is typhus fever and nothing else. The second is that the Marseilles disease has, apparently, not been quite certainly shown to be typhus. Judging by the very brief account given in the note, the disease seems to me to be different from typhus.

Brill's first account of the disease which has been called after him was based on his experience of a number of sporadic cases admitted to a hospital in New York over a series of years. Brill admitted that so far as the symptoms were concerned the disease differed in no way from typhus fever as described by British writers. But he concluded that his disease was not typhus, because (1) it was sporadic and apparently not infectious, and (2) it was not fatal—none of his patients had died. Subsequently, however, instances presented themselves in New York in which more than one case occurred at the same time in the same house, and there were fatal cases. Further, the bacteriologists brought forward evidence that from their point of view Brill's disease was typhus.

After the disappearance from London of epidemics of typhus the disease persisted for many years sporadically. So far as I know, no one ever made the suggestion that the sporadic disease was not typhus. I have had personal experience of typhus as it occurred sporadically in London for over thirty years, and epidemically in Poland in the

autumn of 1919; and I have no hesitation whatever in saying that the clinical symptoms were the same in each set of cases. Similar attempts to differentiate a mild form of typhus as a new disease have recently been made in various parts of the world (India, Australia, the Malay peninsula), and another reason has been urged for the distinction—namely, that the infection of the believed-to-be-new disease is not conveyed by lice. But if the mode of spread is to be used as a criterion of distinction, then we had better call milk-borne scarlet fever "Power's disease" and so on. "Brill's disease" and "tropical typhus" are typhus fever pure and simple; and it will lead only to confusion to continue the use of the newly applied names.

Permit me a word or two respecting the value of the Weil-Felix reaction in the diagnosis of typhus. As I have stated above, there appears to be some doubt whether the Marseilles disease is or is not typhus. But I should not be surprised to learn that, even if the disease were shown to be indistinguishable from typhus clinically, there had been a negative Weil-Felix reaction in every case, provided that only two or three strains of *B. proteus* X^{19} had been employed. According to a very instructive paper by Fletcher and Lesslar (*Bull. Inst. Med. Res., Fed. Malay States*, 1926, No. 1), several strains of the bacillus must be used before the reaction can be stated to be positive or negative. They were able to divide nine different strains into two main groups, of which the one was distinguishable from the other by differences in certain fermentation and agglutination reactions.—I am, etc.,

Hemingford Abbots, Hunts, Dec. 4th. E. W. GOODALL.

WATER SUPPLY AND IODINE IN RELATION TO GOITRE.

SIR,—During the last seven years I have had considerable experience of three rural or semi-rural medical practices in places so far apart as Lincolnshire, Somerset, and Sussex, and in each I have been particularly struck by the prevalence of cases of disordered thyroid metabolism, more especially of the type that is indicated by parenchymatous enlargement of the thyroid gland in young girls at, and for a few years following, the age of puberty; indeed, this has been one of the commonest non-epidemic conditions with regard to which my advice has been sought.

Cystic and adenomatous enlargements of the thyroid have also been common amongst older people. Cases of exophthalmic goitre, of carcinoma of the thyroid, and of myxoedema have been relatively rare. A few cases of cretinism have been found.

Just as in the deficiency diseases like scurvy and beriberi there are early and intermediate stages between complete freedom and the fully developed disease, which are often exceedingly difficult to diagnose, so, in disorders of the thyroid, whether showing hypertrophy or atrophy of the gland, there must be a variety of intermediate conditions leading to physical and mental weaknesses which may escape the observation of the most careful diagnostician; for example, it is not improbable that the slow wit of the agricultural labourer may be due more to the condition of his thyroid than to his somewhat dull surroundings.

Without having any definite figures on which to rely I should say that goitre and thyroid atrophy are more common in rural than in urban areas, whilst it is, I believe, a fact that they are much more prevalent in some rural districts than in others. In the only other district with which I am well acquainted—the county of Antrim—parenchymatous goitre at least is uncommon, but there are doubtless similar free areas in England and in Scotland.

Various theories have been advanced to account for the occurrence of simple goitre, those that hold the field at the present time being (*a*) deficient iodine content in food or in drink; (*b*) inability on the part of the thyroid, for some unspecified reason, to make use of the iodine, though present in the food or drink in normal quantity; (*c*) bacterial infection; (*d*) vitamin deficiency. With regard to (*a*) it has been suggested that distance from the sea is the prime factor in determining the amount of iodine present in vegetables or in water, but none of my practices in any of the above counties were at any considerable distance from the sea, whereas in Central India, far removed from the sea, goitre, in my experience, is uncommon.

If it is true, as I imagine it is, that goitre is more prevalent in certain rural areas than in towns within these areas, it ought to be possible to discover in what way conditions differ in the rural as compared with the urban area, and the first thing to which one's mind naturally turns is the water supply. Towns are supplied usually (in this country, always) with a pure and filtered water, kept under chemical and bacteriological observation. In rural areas water is got from the nearest well, which is often open to suspicion, even to gross contamination, and receives little expert attention. The food supply of these urban and rural areas must necessarily be identical, so far at least as iodine and vitamin content are concerned.

Similarly, with regard to two rural areas, in one of which goitre is common, in the other absent, it ought to be possible to discover how conditions differ in the two areas. For the present, and until light on the subject is forthcoming, my advice to all householders with whom I have to deal is, "boil your drinking water."—I am, etc.,

T. S. ROSS,
Newick, Sussex, Nov. 17th. Lieut.-Colonel I.M.S. (ret.).

CHRONIC APPENDICITIS.

SIR,—I was disappointed that there was no mention of the value of *x* rays in the diagnosis of chronic appendicitis when this subject was discussed at the Annual Meeting of the British Medical Association at Edinburgh. Admittedly it is difficult even when the appendix is visible—which is not often—but when this organ does fill several points can be made out.

1. There may be fixed kinks and strictures.
2. Tenderness localized to the appendix is conclusive evidence of disease.
3. Abrupt interruption of the column of barium is indicative of spasm due to ulceration.
4. Interference with the muscular tone and contractility is shown by delayed emptying up to several days, and the presence of large concretions or the failure of movement after several days.

Dr. E. I. Spriggs has contributed several examples to the literature.* Surely in a disease whose symptoms are so vague as chronic appendicitis we must seize on to every possible means of diagnosis, and radiology can play a useful part.—I am, etc.,

A. P. BERTWISTLE, M.B., ChB., F.R.C.S.Ed.
Harrow, Aug. 10th.

THE PREVENTION OF MATERNAL MORTALITY.

SIR,—In the BRITISH MEDICAL JOURNAL of November 5th (p. 839) Sir George Newman speaks of three needs: First, the pregnant woman should consult her doctor at the earliest opportunity. Second, maternity homes. Third, skilled and competent assistance at childbirth.

This is the whole subject in a nutshell. He then proceeds to crack the nut, and under the third heading he speaks of nothing but the skilled midwife. Surely skilled assistance at childbirth needs more than a midwife is allowed to do: "look on and allow nature to take its course." The medical man is the one who should have charge of the case, whether a midwife is employed or not. I thoroughly endorse the letter of Dr. A. Campbell Stark on page 848 of the same issue.

Coming to the practical side of the question, I consider that prevention is better than cure, and if details such as I give below were carried out we should hear less of maternal mortality.

I. Strict asepsis as regards patient, doctor, nurse, and surroundings. At present the patient is never prepared to a surgical degree, and as the anus is so close to the field of operation it should have special attention. An enema should be a matter of routine, and the patient shaved and prepared with a germicide such as mercuric iodide soap. This is the proper work of the midwife. Incidentally I

* (i) Duff House Papers, pp. 1-32; (ii) *Lancet*, 1919, vol. i, p. 91; (iii) *A Descriptive Atlas of Visceral Radiograms*, pp. 80-83.

consider all pregnant women should be taught to wash these parts daily all through the carrying.

II. Next in importance is the avoidance of real delay. Recent teaching tends to leaving the case to nature, which is all very well so long as nature is running a normal course, which is very seldom, under present circumstances. The position of the child is not everything. We have to consider the strength of the patient in body and mind. Stress of circumstances often causes irritability, impatience, and apprehension, the effect of the pains being utterly spoilt. And there is also the woman who means to be helped, whether you like it or not.

III. In the present day too many doctors fail to study the different phases set before them, and have too few methods thought out of how to help; this is partly the result of present-day teaching. What is wanted is the early diagnosis of these causes of delay. Such as:

A rigid cervix.
Slight divergence of the uterus from its proper axis.
Premature rupture of membranes (a small Champetier de Ribes bag would alter the whole case in half an hour).
Non-rupture of membranes with little or no water behind, the membrane tight on the head; early rupture of these would expedite matters.
Oedema of anterior lip of cervix not reduced.
Most occipito-posterior positions would be better for version. Rotating the head is easier on paper than in reality. The use of forceps in this position is usually contraindicated.
Long-standing pendulous abdomen occasionally allows of turning, but, if extreme, calls for Caesarean section, as replacement is more than likely to injure the bowel, with fatal results.
A primipara of 38 to 40 years, if there is much rigidity of the soft parts with narrowing of the vaginal canal, ought to be offered Caesarean section, so that the most unpleasant and unavoidable complications, such as rectocele, cystocele, and vesico-vaginal and recto-vaginal fistula may be eliminated.

IV. In forceps delivery the instruments should be removed as soon as the perineum is on the stretch, and delivery completed by the aid of the thumb in the ischio-rectal fossa, pressing forward. Axis traction forceps should be the rule. When the head is born it is injurious to the infant to wait for a pain; gentle traction on the head expedites delivery without any risk to the mother if a hand is kept on the fundus. The placenta should be expressed in due course during an interval of the pains.

These are a few of the aids to a woman which a medical man should always be on the look out for, to offer as necessity arises.

I would propose that the local medical specialist appointed by the Ministry of Health should be available to be called by any medical man in trouble, in the same way as any midwife is allowed to call in a medical man to her aid. The fee for such help should be paid by the local health authorities.—I am, etc.,

Wallington, Surrey, Nov. 10th. A. Z. C. CRESSY.

A MISHAP WITH RADIANT HEAT.

SIR,—The following unpleasant personal experience may be of interest, especially in view of the number of unqualified persons who are at present exploiting the little understood effects of ultra-violet rays.

On September 30th, in order to relieve some lumbar pain, which had resulted from a too vigorous use of a lawn-mower two days before, I was persuaded to try a "radiant heat" lamp. The lamp used was a 32 candle-power carbon filament lamp, British made, and stamped "Pope. 10 amps for 230 volt current." Before using the lamp I had a hot bath with a handful of soda in it, which relieved the pain considerably. After rubbing a little iodex over the seat of the pain, which was chiefly around the left posterior superior iliac spine, the lamp was applied for twenty minutes at a distance of about 12 inches.

During the last five minutes of the twenty I felt some aching in the left leg, but half an hour later this aching had developed into the most intense, agonizing pain it has ever been my misfortune to suffer. During the hour that the pain was most intense I was bathed in cold sweat, my pulse became very rapid and could scarcely be felt, and I was on the verge of complete syncope. I certainly felt, and I believe looked, desperately ill. After about an hour the pain lessened, and, with the aid of 1/4 grain morphine, became bearable. But the whole limb felt numb and useless, with the sensation of gross "pins and needles," which might perhaps be better described as "nails and tin-tacks."

Next day, when I first attempted to stand, my left leg gave way and dropped me on my knees. For some days walking produced intense fatigue in the extensor muscles of my left thigh, and I could not go up stairs except by keeping my right leg always in front.

This weakness has gradually got less, but still, nearly two months later, has not entirely gone. There still remains also loss of sensation, both tactile and to heat and cold, in a considerable area over the middle third of the left shin. I also feel undue fatigue in the left thigh muscles after a short walk or on going up steps.

I should be glad to know if a similar result has been noticed after using one of these lamps for the relief of pain.—I am, etc.,

Nuneaton, Nov. 22nd. E. N. NASON.

UNDERFEEDING IN EARLY INFANCY.

SIR,—In your issue of November 26th (p. 997) is a note on a paper in the current number of the *Archives of Disease in Childhood* on "Underfeeding in early infancy." The authors claimed that the chief cause of gastric symptoms and failure to gain weight in infants under six months attending out-patient departments is that they are receiving an insufficient quantity of food. On these findings they put forward the plea for a revision of the feeding instructions on the tins of dried milks and other preparations.

There can be no doubt that the observers are correct in their deductions as to the cause of failure to gain weight amongst infants attending out-patient departments at children's hospitals, but to argue that all feeding directions are fallacious and to advocate feeding by weight and not age is a dangerous tenet that calls for careful thought and investigation.

Fifteen years' experience of children in out-patient departments has taught me that one seldom sees the normal; by that I mean the chief causes of malnutrition there seen are usually due to some extrinsic factor, either constitutional or infective—in fact, the cause lies in the reason of the infants' attendance at the hospital.

To be dogmatic about any dietetic factor as a result of hospital statistics is to court disaster. Especially is this true since the various centres, municipal and others, have added their valuable assistance in safeguarding the health of the infants. Rather is it to these centres, with their keen and efficient medical officers, that we should look for statistics with regard to, not only normality in infant feeding, but also the more simple diseases of nutrition.

Many of your readers may, on the strength of the article, be inclined to adjust, more or less empirically, the feeding directions on the tins of the various infant foods, with the result that they will risk overfeeding, which is a greater menace than underfeeding. My own experience is that these directions are in the main correct, and this, I think, will be borne out by medical officers at centres. Departures from the normal must be met as the clinical needs demand, but to alter the average for the sake of the few is a dangerous doctrine.—I am, etc.,

LEO MANDEL, M.D., M.R.C.P.

London, W.1, Nov. 30th.

CONVULSIONS DURING GENERAL AND LOCAL ANAESTHESIA.

SIR,—From the experimental work detailed in *The Nature of Disease*, volume ii, it would appear that anaesthetic substances act by subjecting the protein particles in the plasma to sudden dehydration and then to an equally sudden hydration. In the first process the protein particles go into solution and in the second process they increase in size, lose their Brownian movements, and tend to become precipitated in the pericapillary lymphatics and capillaries of the brain. It is to the protein particles becoming arrested in the cerebral vessels that the loss of consciousness is due. Should the hydration persist, or increase to a point where the surrounding nerve cells are damaged, then convulsions, coma, and death are liable to occur. The dual

action of dehydration and hydration is due to all anaesthetic substances having negatively charged active groups and a positively charged vehicle. It is to the positively charged vehicle that excessive hydration or the toxic symptoms are due. It thus comes to pass that there is no fundamental difference between the convulsions occurring during anaesthesia and the convulsions caused by such drugs as insulin, cardiazol, histamine, etc., and to the convulsions that are met with in clinical conditions such as shock, eclampsia, status epilepticus, tetany, etc. Status epilepticus is not a disease nor a condition due to an enlarged or persistent thymus. The thymus persists because the patient is intoxicated (chronic intestinal intoxication), and being intoxicated the protein particles are already hydrated before the anaesthetic, which so aggravates the hydration, as to cause death, is used. As the toxic symptoms caused by anaesthetics are due to the natural action of producing hydration, the actual state in which the patient's protein particles happen to be before the anaesthetic is administered must play a greater part in the production of toxic symptoms than either the choice of anaesthetic used or whether it contains impurities or not. In considering impurities as the primary cause, observers have missed the haystack in searching for the pins. As hydration can be prevented by subjecting the protein particles to conduction, and overcome when in being by causing them to become dispersed, toxic symptoms can be avoided by the previous administration of such drugs as Sup 468 and para-thor-mone, and overcome by injecting glucose intravenously and oxygen subcutaneously.—I am, etc.,

London, W.1, Oct. 28th. J. E. R. McDONAGH.

CONTRIBUTORY SCHEMES: HOSPITAL CLUB PRACTICE.

SIR,—In your issue for November 12th last you were good enough to allow me to refer to certain considerations you had elaborated in your issue of October 22nd (p. 751) with regard to these numerous clubs.

Since then I have completed a restricted inquiry made, with the assistance of Division secretaries and the honorary secretaries of visiting staffs of hospitals, in various directions with regard to thirty-five clubs selected at random. Reports from thirty have been received. All, one feels sure, must appreciate and feel grateful to those who have assisted in this inquiry giving a return of over 90 per cent., a result which has made headquarters envious! Possibly the result may interest many of your readers who are now considering this problem of hospital provision. (In cases where the total of figures does not make 30 it is because no reply was given to question asked.)

(*a*) Seventeen of these clubs are conducted by hospitals; 13 by independent bodies.

(*b*) One club (only) pays anything to the visiting staff.

(*c*) No club makes any arrangements for consultant or specialist services to be given, either at the homes of the members or at the houses of these practitioners (whether members of the visiting staff or not). All members are attracted to the hospitals.

(*d*) Nine visiting staffs object to being paid for treatment given at a hospital; 8 desire it; 5 are divided in opinion; 3 have not as yet considered it.

(*e*) Nine visiting staffs approve payment under (*c*) above; one objects; one is divided in opinion; 6 have not as yet considered it.

(*f*) In 17 areas there are practitioners (consultant and specialist) available who are not on the hospital staff and who are of the British Medical Association standard of competency.

(*g*) In 18 areas treatment is provided for at the hospitals which, in the opinion of the local profession after considering the best interests of the patients, could be equally well given at the patients' homes or the houses of the consultant and specialist (that is, by the visiting staff and others in their private capacities). In 6 areas no such treatment is provided for at hospitals.

(*h*) In 8 areas the surrounding cottage hospitals are involved in the club, in 6 of which the staffs are debarred consequently from accepting fees.

(*i*) In 12 areas there are sufficient funds in the club to assist convalescent homes, nursing associations, dental treatment, and treatment of school children.

(*j*) The premiums for insurance in the club range from 2d. a week to 21s. a year, collected by money-boxes and visitors to private houses, and on the premises of shops and firms.

Local medical opinion with regard to these clubs, stated quite shortly, is as follows in thirteen areas.

(1) "We are being exploited." (2) "Considerable feeling against it." (3) "A gigantic cheap club; staff, being elected every five years, cautious about opposition to board." (4) "Consultants anxious; all these schemes will enslave us." (5) "Local profession against scheme." (6) "Great abuse." (7) "There is a strong feeling against the scheme." (8) "They say 'we pay'; I hear also many complaints from general practitioners that the contributory scheme is hitting them." (9) "Suspicion . . . that the hospital is made into an insurance dispensary." (10) "Profession too apathetic for words; interests of local practitioners seriously affected." (11) "Consulting work much diminished; private operations much diminished; shortage of beds prevents much more widespread inroads into both consulting and general practice." (12) "Considerable local professional feeling against the scheme, especially amongst the junior staff, who are being deprived of a large amount of fees, chiefly for minor operations and consultations." (13) "The medical profession strongly averse from the scheme."

The public (lay) press is of opinion, as recently expressed, that—

(1) "The improved financial position of voluntary hospitals is due to contributory schemes." (2) "Working men prefer independence to charity." (3) "They enjoy the status of independent persons who have insured themselves against emergencies and are under obligation to nobody" (*Times*, November 29th, 1927).

The deductions from the reports would seem to be:

(1) That the premiums of insurance paid are totally inadequate to pay for the benefits contracted for by the club, and that as a consequence charitable funds are used to make up the deficit in accommodation and maintenance charges; the question of treatment being paid for is not thought of.

(2) Income limits are largely non-existent.

(3) The very fact of insurance has created an increased demand for treatment, and consequently the larger the membership of the club, the larger the debt to be met by charity. In London the club has 400,000 members with 83,000 attendances as out-patients.

(4) The voluntary hospitals concerned have ceased largely to be charitable institutions for the poor, having become an accessory of insurance clubs.

(5) Consequently it is a question of some interest whether these voluntary hospitals can claim any longer to be "a body established for charitable purposes only" (43 Elizabeth, c. 4) and consequently can avoid being taxed and rated.

(6) These hospitals contract to provide many consultant and specialist services which—allowing for the best interests of the members of the club—could be given equally well, and certainly more expeditiously, at the homes of the members or the houses of the practitioners.

(7) Consequently these hospitals, subsidized by charity, are underselling private practitioners who are not on the visiting staff, and who depend on their private practice for experience and remuneration.

(8) The boards of management—in many cases formed of a majority of the club officials—are "the masters of the visiting staff."

(9) The visiting staffs in a few cases, and the senior members (only) in the larger number, do not appreciate (6) and (7) above, or they would hardly continue indifferent.

(10) All the objections the profession had in 1906 to the domiciliary clubs conducted by friendly societies seem to be present in these hospital clubs.

Is not the whole position becoming derogatory to the dignity of medicine; and can the visiting staffs much longer rest content to go on in the position of servitude into which they are being manœuvred? As a suggested line for action, which is in accordance with the hospital policy of the British Medical Association, would the visiting staffs, in cordial co-operation with the local Division and supported by its disciplinary powers (1) refuse to give any "treatment" at a hospital (whether for a club conducted by a hospital or by an independent body) which can be provided—allowing for the best interests of the members—just as well by the visiting staffs and others in their private capacity outside; and (2) demand some form of payment through the hospital for treatment at a hospital for these club members in all other instances?

If they did this then the opinions of the public press would be nearer being correct, and medicine would be relieved of its latest incubus.—I am, etc.,

Hove, Dec. 3rd. E. ROWLAND FOTHERGILL.

A CLINIC FOR PHYSICAL TREATMENT IN LONDON.

SIR,—In view of the prominence given in your issue of November 12th (p. 893) to a proposed clinic for physical treatment in London, may I draw attention to the fact that at the Physical Treatment Centre, Kensington, an attempt has already been made to meet the deficiency referred to in the article.

In a footnote three typical cases from the clinic at Amsterdam are quoted to indicate the need for physical treatment centres. Our case sheets could provide similar cases by the score, if not by the hundred.

All the ordinary forms of physical treatment are carried out here with the solitary exception of hydrotherapy. In the article mentioned it is said, "Such clinics . . . have proved their value in other countries." I think we may justly claim that this clinic has proved its value in London, and at the present moment we have well over two hundred cases attending regularly for treatment—this without any official recognition from any approved society.

The clinic was founded to meet the necessity of providing physical treatment for those who are ineligible, or socially unsuitable, for a hospital clinic, and who are yet not in a position to secure the treatment privately. We also provide evening treatment so as to enable patients to come to us without interfering with their work. The numbers who avail themselves of this opportunity are ample proof of the need. The rules of this clinic are:

1. No patient is accepted for treatment unless recommended by a qualified medical practitioner.
2. No patient receives treatment until after examination by one of the medical officers of the clinic, who sees the patient with the masseuse, and prescribes treatment, and communicates with the patient's practitioner.
3. All treatment is carried out by a fully qualified staff, who all possess the three certificates of the Chartered Society of Massage and Medical Gymnastics.
4. All patients must report for periodical examination by the medical officers of the clinic.
5. Before treatment commences all patients must satisfy the fully trained almoner that they are not in a position to pay full consultation fees, or for the carrying out of the full treatment prescribed over an adequate length of time by a qualified masseuse in private practice. The maximum fee payable for treatment is five shillings, but each patient is suitably assessed by the almoner. Some applicants are referred back to their doctor as unsuitable for institutional treatment, others are sent to hospital; but a very large field is covered between these two classes.
6. All patients are treated by appointment, and are therefore charged for treatment, unless adequate notice is given of absence.

It is very much to be hoped that, at the proposed clinic, the first five of these regulations will be strictly enforced, and that a fully trained almoner may be employed to prevent abuse.—I am, etc.,

JAMES MENNELL.

Physical Treatment Centre, Kensington Division, B.R.C.S., Dec. 2nd.

THE PHYSIOLOGY OF DEFAECATION.

SIR,—Dr. A. F. Hurst (BRITISH MEDICAL JOURNAL, December 3rd, p. 1053) explains that each meal gives rise to peristalsis in the large intestine. True, but he goes on to state that the greater part of the contents of the intestines accumulates in the pelvic colon till the early morning. This may be true of most "normal" people living on the devitalized diet that has become customary, but it is not the natural physiological sequence; this is proved by the habits of those native races whose diet is a natural one, and also by those of our own race who have adopted a natural diet (including wholemeal, fresh fruits, and salads at every meal). With them a call to stool occurs after each meal, and, if responded to, leads to a soft solid evacuation.

It is most fallacious to regard natural foods as irritating; they are nothing of the kind; they are merely mild mechanical stimulants of intestinal activity, and they achieve this mainly by their bulk. True intestinal irritants are soluble substances, and the most potent are the products of putrefactive bacteria. These give rise to the chronic catarrhal state of the mucosa revealed with appalling frequency on making *x*-ray examinations of the colons of persons living on the customary diet of starch, sugar, and overcooked protein. Bacterial toxins inhibit peristalsis in the colon and lead to the use of purgative drugs, which aggravate the intestinal catarrh, and thus create a vicious circle.—I am, etc.,

London, W.1, Dec. 3rd. ALFRED C. JORDAN.

SIR,—Dr. Hurst is very complimentary to the scope of the influence of the New Health Society, even though its teaching, in his opinion, is having so disastrous an effect. Having been associated somewhat closely with the educative literature on diet issued by that society, I would like to point out that our teaching is based, *primarily*, on the necessity for obtaining a correct "balance" in the dietary.

For this reason the more liberal use of green leaves, whole cereals, and fresh fruit has been advocated, and this teaching is based on the best knowledge that we possess of the essentials of good nutrition.

Clinical and laboratory experience show that the higher vitamin content (and possibly also the higher content of indigestible cellulose in these foods) plays an important part in securing healthy activity of the intestines. If this, as Dr. Hurst maintains, is unphysiological we are in somewhat of a dilemma. It must also not be forgotten that these particular articles of food have been freely used by humanity through countless generations, and that our present dietetic habits have existed during only a very small part of man's existence. It is very doubtful whether there has taken place any real adaptation to this change of habit. What has followed, however, is so great a prevalence of gastro-intestinal disorder that special clinics and a galaxy of surgical talent are called for to deal with it.—I am, etc.,

London, W.1, Dec. 5th. S. HENNING BELFRAGE.

DEVELOPMENTAL ANOMALIES.

SIR,—In a memorandum in the issue of the JOURNAL of November 12th (p. 876) Dr. Richard H. Hunter describes an instance of a rare developmental anomaly in a newborn infant, and states that he has been unable to trace a record of any similar case. May I draw attention to a case of persistence of the cloaca which I observed and which was described in your columns on December 10th, 1921. Since that time I have had the opportunity of examining two additional cases of this condition. In one of these (1924), as in my original case, the abnormalities were almost identical with those described by Dr. Hunter, while in the other case (1922) there was an associated exomphalos and the anterior wall of the cloaca was incomplete. In all my three cases the large gut had a small but patent aperture at its lower end, leading into the cloacal sac above, but in none of them was there any anal opening. Dr. Hunter's case had a left-sided hydronephrosis. None of my cases had this, but one of them had slightly dilated ureters. In all of them, as in Dr. Hunter's case, the urethra was quite impervious. Dr. Hunter raises the question as to the period at which the kidneys begin to secrete. He will find some evidence on this point in papers published in 1923 and 1924 by E. E. Hewer and by Lucas Keene and E. E. Hewer.—I am, etc.,

Glasgow, Nov. 15th. J. NORMAN CRUICKSHANK.

MOBILE LABORATORIES IN THE WAR.

SIR,—I would like to say that I yield to no man in my admiration for the work of the late Adrian Stokes, but I cannot help thinking that it is a pity that his death should be made the occasion for a wrangle as to which of the two directorates of the Medical Department of the War Office—pathology or hygiene—was responsible for the first mobile laboratory to appear in the field in France in 1914.

Colonel Lyle Cummins's letter (November 19th, p. 956) substantially agrees with mine in that Stokes was not associated with either of them (JOURNAL, October 8th, p. 660). It must be very plain to the onlooker that the two laboratories must have run a neck-and-neck race as to priority, and that the date of their appearance at St. Omer

is scarcely an adequate criterion. Coplans's hygiene laboratory crossed over to France on November 17th, and Rowland's bacteriological laboratory on October 14th. I respectfully say that this evidence hardly permits the validity of the suggestion put forward by Colonel Cummins —namely, that "so great was the success of this laboratory [that is, Rowland's] that the director of hygiene determined to have mobile laboratories on somewhat similar lines fitted up for the hygiene department." The time is all too short to warrant this assumption.

As Dr. Coplans was also engaged at the Lister Institute as a voluntary worker on the outbreak of war, and therefore a fellow worker of Rowland, I have asked his opinion on the matter. He tells me that during the months of June and July, 1914, he was engaged in making a sanitary survey of the area which was afterwards the area of hostilities, and that on August 5th or 6th he was present at the War Office when the sanitary situation was discussed. During September he had 150 men of the 1st London Division under training for special service in connexion with field water supply, and that the director of the Institute kindly gave facilities for instruction by placing the Institute's laboratories at his disposal. The matter of a special mobile laboratory had also come under consideration, and the work of construction was given by the War Office to the Napier works at Acton. Owing to pressure there was considerable delay in delivery, and during this period the Lister Institute managed to obtain a ready-built motor caravan, which was fitted up and immediately dispatched under Lieutenant Rowland. The hygiene laboratory followed as soon as it could be completed. It will be seen, therefore, that the hygiene department of the War Office had not been backward in the matter.

With regard to the epidemic of typhoid fever, this took place amongst Belgian civilians living in Belgium. Colonel Cummins, who is usually so accurate, is in error in referring to the D.A.D.M.S. (Sanitation), Second Army, in this connexion, as this appointment was not created until some eighteen months later. Captain Coplans, who was in charge of the hygiene laboratory, was also appointed to act as my sanitary officer. He confirms my statement that Adrian Stokes took no part in the measures taken under my direction for dealing with this epidemic, and states that neither before nor during the epidemic had he any communication with Stokes, either directly or otherwise, upon this or any other matter. This statement is sufficiently categorical, and should dispose of the whole matter. I would emphasize, however, that this outbreak occurred in Belgium, and that the Second Army was at that time the only British force in that country. The measures for dealing with the outbreak were undertaken solely by the authority of the Belgian Ministry of the Interior, and I was named sanitary authority in this connexion by the Governor of West Flanders.

The hospital mentioned at Malassise (which is in France), the bacteriological work of which was carried out by Stokes and Cecil Clarke, first began to receive patients in February, 1915—some time after the beginning of the outbreak. It so happens that by Belgian law only such patients could be transferred from Belgium to France as consented, and therefore the class of patient transported was mainly convalescent. The Second Army dealt with about 2,500 cases, of whom rather less than one-third were transferred to Malassise for a time, many being retransferred later to a Belgian hospital situated on the Canche in the neighbourhood of Montreuil. There was also a Belgian hospital situated at La Panne which received enteric patients from the northern area, including the left flank of the Second Army. There were also three hospitals receiving cases within the army area.

I am glad that Colonel Cummins is in agreement that the history of this epidemic should be fully recorded. —I am, etc.,

ROBERT PORTER,
Major-General (Ret.).

Beckenham, Nov. 23rd.

*** Although ready to publish a correction of any matter of fact, we cannot undertake to continue this correspondence. The story of the epidemic might, we think, more properly be thrashed out elsewhere.

Medico-Legal.

TYNDALL *v.* ALCOCK.

ACTION FOR NEGLIGENCE AGAINST A SURGEON.

Heavy Damages in Case of Volkmann's Contracture.

AT the adjourned Bristol Assizes last week, before Mr. Justice Shearman and a special jury, an action for damages was brought by Phyllis Evelynne Tyndall, a minor, suing through her next friend, Joseph Williams, and her mother, against Dr. Arnold Alcock of Gloucester, for alleged negligence and unskilled treatment. The defence was a denial of negligence and unskilled treatment, and a counterclaim for twelve guineas for services rendered was made. Mr. H. A. Hawke, K.C., and Mr. Odgers, instructed by Messrs. Le Brasseur and Oakley, London, and acting for the London and Counties Medical Protection Society, appeared for the defendant.

Mr. Holman Gregory, for the plaintiff, stated that on July 6th, 1926, the child, Phyllis, aged 8, fell from a donkey, at Newent, and fractured her left arm. She was taken in a motor car to Gloucester, and was treated by Dr. Alcock, first at a nursing home, and later in the Gloucester Infirmary. The arm became fixed at the elbow, and Volkmann's contracture developed, resulting in permanent impairment of movement. The child was said to be very intelligent, and a brilliant musician; she had already passed three musical examinations, and had performed in public. She would now be unable to play effectively any musical instrument. The mother had had to spend upwards of £80 on treatment, and compensation was claimed on this count also.

In cross-examination Mrs. Tyndall stated that she did not recognize that there was any greater danger in taking the child for a ten-mile motor ride after the accident than in bringing her home; the arm was held very carefully during the journey. She denied that Dr. Alcock had emphasized the serious nature of the case from the first.

Dr. H. Chitty gave evidence that he had examined the child on October 14th, 1926, and that there was then no voluntary movement of the wrist, fingers, and thumb. She was suffering from fixation and contracture, which usually arose from tight bandaging or splint pressure. He agreed that the fracture, though of the simple type, was severe. In answer to questions by Mr. Hawke he admitted that skiagrams might be misleading, and that more than one should be taken in various positions.

Dr. F. J. A. Mayes, radiographer at the Bristol Infirmary, said that *x*-ray photographs of the child's arm showed that the fracture had not been reduced. Mr. N. Duggan, orthopaedic surgeon at Worcester Infirmary, said that without a radiological examination at the time it was possible for a competent surgeon to overlook the condition of non-reduction shown in the skiagram.

Case for the Defence.

Mr. Hawke, K.C., opening for the defence, claimed that the question was not whether there had been an error of judgement, but whether Dr. Alcock had done something which a person of ordinary standard in his profession would not have done.

Dr. Alcock, examined by Mr. Odgers, said that he was honorary surgeon to the Gloucester Infirmary, and had been president of the Gloucestershire Branch of the British Medical Association. He had practised in Gloucester for eighteen years. When he examined the child after the accident he had found a fracture of the lower end of the humerus; the fragments were in bad position, the elbow slightly swollen, and the ends of the bone were injuring the tissues. He manipulated the bones into position, after which a screen examination showed that the fragments were in alignment; he was satisfied that the fracture had been properly reduced. The arm was then suspended from the shoulder and an *x*-ray photograph was taken. He had viewed the case seriously from the first, and had explained this to Mrs. Tyndall as tactfully as he could. The pulse and colour of the hand were normal at that time, but the upper bony fragment almost protruded through the skin, and threatened severe damage to other structures. Instructions were given that the circulation should be carefully watched. The next day the hand was a little swollen, and the bandages were loosened. On the fourth or fifth day there was more discoloration, and Dr. Alcock realized that the circulation was obstructed. The bandages were loosened and the strapping removed. Blisters were present, but these were kept sterile, and, while the child was under his care, no gangrene supervened. He suspected the possibility of Volkmann's contracture about July 11th or 12th, and was certain of it by the third week of treatment. He told the mother that the child would be hopelessly paralysed. He knew that the fracture was slightly over-reduced, but he thought this advisable, since it involved less interference with the blood vessels.

Professor Hey Groves of Bristol said that the skiagram showed severe fracture of the lower end of the humerus, with satisfactory reduction, or over-reduction; complete alignment was often impossible to obtain. When symptoms of Volkmann's contracture occurred it was much more important to restore the circulation than to maintain alignment. He thought that Dr. Alcock had adopted the proper course in his treatment. Other evidence in support of the defendant was given by Dr. C. W. Knight, senior surgeon at Gloucester Infirmary, the matron of the nursing home, and a masseuse.

Mr. Hawke, addressing the jury for the defendant, said that Dr. Alcock could not be said to have omitted any necessary step, since he had made radiological examinations in consultation with a skilled radiologist. It was admitted that distortions in skiagrams

were not infrequent, and gave rise to errors of judgement. Mr. Holman Gregory, for the plaintiff, maintained that it ought to have been realized from the skiagram that something was wrong, and further attempts should have been made to reduce the fracture more perfectly.

Verdict and Judgement.

After the judge had summed up, the jury retired for one and a half hours, and returned a verdict that Dr. Alcock had not properly set the bone, and had failed to treat the case properly afterwards. The judge then explained that the verdict was incorrect, and that the jury had to return a verdict that the defendant was guilty of negligence, if he had shown, in their opinion, an improper lack of skill. After a few minutes' absence the jury returned, and the foreman stated that a unanimous verdict had been found for the plaintiff, the damages being assessed at £2,000 for the daughter, and £150 for the mother. Mr. Odgers applied for a stay of execution, which was granted on condition that the costs of the action and £500 were paid into court by the defendant.

Universities and Colleges.

UNIVERSITY OF LONDON.

DR. NEVILLE S. FINZI has been recognized as a teacher of radiology at St. Bartholomew's Hospital Medical College.

The examination for the academic diploma in Bacteriology will commence on the first Thursday in July instead of the first Monday; the regulations (Red Book, 1927-28, p. 513) are to be amended accordingly.

Sir Wilmot Herringham, K.C.M.G., M.D., has been elected chairman of the Library Committee.

The following are constituted the Boards of Examiners for the first examination for medical degrees, together with the External Examiners, the chairmen of the respective boards being indicated by an asterisk: *Inorganic Chemistry:* H. J. Evans (University College) and *C. S. Gibson (Guy's Hospital Medical School). *General Biology:* *G. P. Mudge (East London College and London School of Medicine for Women) and W. A. Cunningham (St. Bartholomew's Hospital Medical College), or failing him, F. E. Fritch (East London College). *Physics:* W. H. White (St. Mary's Hospital Medical School) and J. E. Calthrop (East London College).

UNIVERSITY OF DURHAM.

SIR THOMAS OLIVER, M.D., LL.D., F.R.C.P., president of the College of Medicine, Newcastle-upon-Tyne, has been appointed Vice-Chancellor of the University of Durham, in succession to Professor P. J. Heawood.

UNIVERSITY OF LIVERPOOL.

AT a meeting of the University Council, held on November 29th, a bequest was reported, under the will of the late Emeritus Professor W. Thelwall Thomas, F.R.C.S., of £5,000, to endow a Fellowship in surgical pathology.

UNIVERSITY OF ABERDEEN.

AT a special graduation held on November 29th the following diplomas were conferred:

D.P.H.—Catherine H. Baxter, Ethel R. Emslie, Winifred M. Foster, Grace M. Robinson, and Enid Ogilvie.

UNIVERSITY OF DUBLIN.

SCHOOL OF PHYSIC, TRINITY COLLEGE.

THE following candidates have been approved at the examination indicated:

FINAL MEDICAL EXAMINATION: *Part II, Medicine (M.B).*—A. R. Ewart, J. E. Wells, K. Watson, E. M. Gamble, J. R. Hanna, G. H. Henry, J. H. Stephens, L. R. Brumberg, Wilfreda D. C. T. Piggott, H. S. North, Christina M'Donald. *Surgery (B.Ch.):* *R. R. Woods, J. K. Harper, G. M'Donald, G. M. Smith, Ethel M. Weir, J. H. Stephens, G. H. Henry, A. R. Ewart, I. Isaacson, R. M. Moore, C. E. G. Nunns, I. le Roux, C. P. Wallace. *Midwifery (B.A.O):* *A. A. Morgan, *H. R. F. Tweedy, R. I. G. Reid, Marie M. E. Lea-Wilson, H. J. Robinson, J. K. Harper, H. E. Knott, F. G. Stewart, C. R. Harris, J. Horwich, R. F. W. K. Allen, W. Crawford, G. W. F. Pratt, D. F. Walsh, A. C. G. Ffolliott, F. O. W. A. Mahon-Daly, J. Sayers, H. S. Smithwick, Nora A. Stack, E. S. Adderley, J. E. Wells, E. C. Hicks, G. Q. Chance.

M.CH.—B. Gluck.

DIPLOMA IN GYNAECOLOGY AND OBSTETRICS.—Ann Macleod.

* Passed on high marks.

ROYAL COLLEGE OF PHYSICIANS OF IRELAND.

AT the monthly meeting of the Presidents and Fellows, held on December 2nd, the President duly admitted to the Licences in Medicine and Midwifery of the College the following candidates who had passed the Winter Final Examination under the Conjoint Scheme of the Irish Royal Colleges of Physicians and Surgeons:

W. Bannan, J. J. Benson, J. Chambers, A. Clein, L. S. Clifford, J. P. Egan, F. N. Elcock, J. J. Golding, J. L. Miller, May F. M'Carthy, P. L. O'Neill, Sarah M. O'Neill, J. C. Richardson, A. Stein, F. W. Warren.

Dr. R. H. Micks was elected as Deputy for the King's Professor of Materia Medica and Pharmacy to act as Clinical Physician to Sir Patrick Dun's Hospital.

A letter was read from the President of the Royal College of Physicians of London, asking the College to appoint a delegate to the Harvey Tercentenary Celebrations in 1928. In accordance with the unanimous wish of the College, the President (Dr. William Arthur Winter) consented to act.

Obituary.

DR. WALTER CHARLES ORAM, who died on November 28th, at the age of 52, received his medical education at Trinity College, Dublin, where he graduated M.B., B.Ch., B.A.O., in 1900, and proceeded M.D. five years later. He was a senior moderator and gold medallist of his year. A colleague at the Northern Hospital, Liverpool, writes: Oram came to Liverpool in 1904 after a distinguished career at Trinity College, Dublin. The son of a man distinguished in physical science, he had the same natural bent himself, and at Trinity College he graduated B.A. with honours in experimental physics and chemistry. He used to say that engineering was his first choice, and that he entered medicine determined to study the therapeutical applications of electricity. He devoted his talents to this study from the first and came to Liverpool to take charge of the electrical department of the Skin Hospital. Radiology was then in its beginnings, and with his knowledge of physical science he found in this subject exactly the work for which he was naturally fitted. At first he combined this work with general practice, but after a few years he obtained important hospital appointments and confined his attention entirely to radiology. From this time he did a phenomenal amount of work in the voluntary hospitals to which he was attached; the Northern Hospital and the Stanley Hospital in Liverpool, and the infirmary in Southport owe him a very deep debt of gratitude for years of devoted service. With this hospital work he combined a busy private practice, and there is no doubt in the minds of those who knew him well that he persistently overtaxed a physique which was not naturally very robust. He gave himself few holidays, and those few he often cut short because of some duty which he fancied he was neglecting or not completely fulfilling. I have known him to plan a fortnight away, and then, after a week, to think of some batch of reports or other work waiting to be completed, and to return because of this before the scanty fourteen days were over. This was characteristic of the man, a devotion to his work which did not allow him to spare any pains or energy. At the time of his death his hospital appointments were physician-in-charge of the radiological department of the Northern Hospital, honorary radiologist to the Stanley Hospital, honorary radiologist to St. Paul's Eye Hospital, and radiologist to the Southport Infirmary. This catalogue is an indication of the amount of voluntary work which he contrived to do. In 1912 he was secretary of the Section of Electro-Therapeutics at the Annual Meeting of the British Medical Association in Liverpool. During the war he was on the staff of the 1st Western General Hospital, and for six months was with the 57th General Hospital in France as radiologist. His death at the early age of 52 was due to the overtaxing of his physical powers. His many friends will remember him as a man whose modesty and devotion were the outstanding features of his life; they will not think it unfitting to put on record the fact that he would never have been able to do the great amount of work which he gave to the public service without the expert assistance of an able and devoted wife.

DR. JOHN PRIOR PURVIS, who died on November 18th, was born in 1841. In 1859 he entered as a student the *Dreadnought* hospital ship, and in the following year joined St. Thomas's Hospital. In 1863 he obtained the diplomas M.R.C.S.Eng. and L.S.A., and was then appointed house-surgeon to the West Herts Infirmary, Hemel Hempstead. In 1867 he joined his father in practice at Greenwich, and two years later was appointed medical officer to the Royal West Kent Dispensary, which subsequently became the Miller General Hospital; on his retirement from this institution in 1925 he was elected an honorary governor. In 1885, in conjunction with Miss Christabel Airy, he established the Greenwich Provident Dispensary, and remained one of its medical officers until his retirement in 1925. In 1870 he had been appointed public vaccinator, and he held this post until his death. He

took great interest in the 2nd Volunteer Battalion (Queen's Own) Royal West Kent Regiment, and was awarded the Volunteer Decoration. He lectured for the St. John Ambulance Brigade for many years, and was an honorary associate of the Order of St. John of Jerusalem. He succeeded his father as treasurer of the West Kent Medico-Chirurgical Society, and held the post for thirty years; he similarly followed his father as chairman of the Greenwich Industrial Permanent Building Society. He was a member of the executive committee of the Greenwich Division of the British Medical Association in 1911, and from 1914 to 1921; he was chairman in 1913. Dr. Purvis leaves four children, twelve grandchildren, and two great-grandchildren.

Dr. LEO NORTON KNIGHT O'NEILL, who died on November 22nd, in the Norfolk and Norwich Hospital, after a short illness, was born in 1890, and was educated at King's School, Canterbury, and Exeter College, Oxford, where he graduated B.A. in 1913. Prevented by a cycle accident from serving as a combatant in the war, he entered Durham University College of Medicine in 1915, and was appointed surgeon probationer in the navy in 1918, serving until the end of the war in H.M.S. *Beaver*, which was the first allied ship to pass the Dardanelles after the armistice. After demobilization he resumed medical study, and graduated M.B., B.S.Durh., in 1922. He held house appointments in the Royal Victoria Infirmary, Newcastle-on-Tyne, and was resident medical officer of the Kent and Canterbury Hospital. In 1925 he began practice in partnership at Great Yarmouth. Dr. O'Neill was an enthusiastic yachtsman and knew the south coast of England very well.

Dr. HENRY ERNEST KNIGHT of Rotherham died on December 2nd. The son of a doctor, he was born at Rotherham in 1866, and from the local grammar school went on to Epsom College and St. Bartholomew's Hospital. In 1889 he took the diplomas of the English Conjoint Board and also graduated M.B.Lond., and five years later proceeded M.D. Before returning to practice in his native town he had served as house-physician and assistant electrician at St. Bartholomew's Hospital, and house-surgeon to the Stockton and Thornaby Hospital. He was president of the Sheffield Medico-Chirurgical Society in 1911-12, and was a member of the Rotherham Division of the British Medical Association. In 1913 he was appointed a justice of the peace, and in the same year was elected a feoffee of the common lands of Rotherham; he had also held the office of greave. Dr. Knight was formerly honorary surgeon to the Rotherham Hospital, but when extensions were opened he accepted the position of honorary physician.

Dr. CHARLES CORMACK GREIG died recently in his eightieth year at his native town of Fyvie. He was educated at Aberdeen University, where he graduated M.B., C.M. in 1873, after which he continued to carry on his father's practice up to the time of his death. He was parochial medical officer and public vaccinator for Fyvie and Auchterless, medical officer to the Fyvie Cottage Hospital, and a member of the Aberdeen Division of the British Medical Association. Dr. Greig was for many years an enthusiastic volunteer; he joined as a private of the Fyvie Company of the 2nd Volunteer Battalion, Gordon Highlanders, in 1874, became acting surgeon to the same company in 1875, was promoted surgeon major in 1890, and surgeon lieutenant-colonel in 1895, in which year he received the Volunteer Decoration. He was appointed lieutenant-colonel R.A.M.C.T. in 1908. Two daughters survive him.

Dr. ROBERT DUNSTAN died in London on November 27th following an operation; he was 79 years of age. He received his medical education at Guy's Hospital Medical School, and took the diploma of L.S.A. in 1871 and M.R.C.S. in 1872. He served as surgeon to the Paignton Cottage Hospital, and medical officer in charge of troops at Paignton. He was an enthusiastic chess player, and represented several counties, his last match being for Sussex only a short time before his death.

Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

THE House of Commons has been chiefly occupied this week with the Unemployment Insurance Bill.

In the House of Lords, on December 6th, the Marquess of Salisbury made a statement about the business which the Government hoped to get through before Christmas. In addition to the principal Government measures there were some others which it would be in the interests of the country to get through if possible. Among these were the Mental Deficiency Bill and the Nursing Homes Bill. These bills were not yet through the House of Commons, but if they were quite non-contentious in the House of Lords perhaps the Government might ask them to agree to them.

In the House of Lords, on December 6th, the Royal Edinburgh Hospital for Mental and Nervous Diseases Order Confirmation Bill was read a third time and passed.

The Future of Voluntary Hospitals.

Mr. Roy Wilson asked the Minister of Health, on December 1st, whether, in his proposals for the reform of the Poor Law and reorganization of the health services of the country, he contemplated that the voluntary hospitals should come under the control of the State or the local authorities. Mr. Chamberlain answered that, on the contrary, he regarded the preservation of the voluntary hospital system as a matter of essential importance in the health interests of the country. What had been impressed on his mind was the absence at present, as a general rule, of any systematic arrangements for co-operation between the voluntary hospitals and the hospitals and institutions carried on by the local authorities. He had, therefore, suggested that it was advisable that there should be consultation in the various areas with a view to arriving at an agreed plan for institutional provision which would enable each kind of hospital to play its proper part in meeting the ever-increasing need of the people for hospital accommodation. He anticipated that under such a plan the position of the voluntary hospitals would be strengthened and not weakened, but he had never contemplated putting any compulsion upon them to come into an arrangement, their participation in which would be a matter for their own determination. During the past twelve months the voluntary hospitals had responded in an astonishing manner to the requirements of the country, and, while at one time it had appeared to be impossible for them to meet the need for extension, they were now largely overcoming that difficulty. Not only had they been able to find, in most cases, sufficient money for the maintenance of existing beds, but they had been able to make very considerable additions.

The Evils of Slums.

In the House of Lords, on December 5th, the Bishop of Southwark asked when the Government proposed to introduce legislation to facilitate the clearance of slum areas. The London County Council had schemes relating to about 91 acres, which would affect 25,000 people, but it was estimated that 11,500 houses, containing a population of over 100,000, were insanitary. The existence of the slums meant that a very large portion of the population had to grow up under conditions in which health was almost impossible, and where character as well as physique was almost bound to deteriorate. Many reformers believed that a great deal could be done to recondition many houses if the slums were purchased by the local authority. Slum clearance was, of course, the ideal solution, but some such temporary measure as he suggested might be necessary.

The Bishop of London said that overcrowding was the parent of disease. People could not be expected to live healthily in such conditions.

Viscount Gage, replying for the Government, said that the erection of some 1,040,000 new houses since the armistice must have relieved the evil of overcrowding, and the progress made in slum clearance, having regard to the difficult circumstances, could be described as encouraging; 105 slum schemes had been confirmed by the Minister of Health, and others were under consideration. Apart from the wholesale clearance of large slum areas, local authorities were paying constant attention to the condition of individual houses in their districts. The reports of the medical officers of health for 1925 showed that 1,114,000 houses had been inspected by officers of the local authorities. Of these houses, 244,000 were rendered fit by the owners, after service of statutory notices; 5,000 were made fit by the local authorities in default of the owners, and defects were remedied in the case of 279,000 houses without the need of formal action. Thus the local authorities were able to secure repairs in 528,000 cases during that year. The Minister of Health, however, considered that the problem must be tackled in a much more comprehensive manner if any considerable improvement were to be effected within a reasonable time. There was no doubt that the very large number of new houses now being completed annually must ultimately—and it was hoped in the near future—relieve the overcrowding problem; and the time should not be far distant when local

authorities would be in a position to turn their attention in a greater degree to the slums. Although the powers of local authorities for dealing with slums were wide, it might be possible to introduce a further measure whereby houses in an unsatisfactory area, which might be saved by the expenditure of a little money, would be reconditioned, and only houses which were past redemption would be demolished. Another matter on which the Minister had promised to legislate was in regard to the basis of compensation for insanitary property acquired in connexion with slum schemes, but the time or nature of the legislation could not at present be stated.

National Health Insurance.—In an answer given on December 1st to Sir Richard Luce, Mr. Chamberlain said that the recommendations of the Royal Commission on National Health Insurance had been exhaustively discussed with the consultative council of approved societies, and the Government intended to take the first convenient opportunity of introducing an amending Health Insurance Bill embodying most of the recommendations of the Commission. It did not, however, propose to provide in this bill for the abolition of Insurance Committees or for the extension of medical benefit to include a specialist and consultant service by means of a partial pooling of societies' surpluses.

Small-pox.—The Minister of Health stated, on December 6th, that the number of cases of small-pox notified in the city of Lincoln during the three months ended November 26th was 33. He was informed that, with a view to preventing overcrowding of the small-pox hospital, a ward block at the isolation hospital, separated from the remainder of the hospital by a fence, was being used for the treatment of small-pox patients.

Inspection of Offices.—Dr. Fremantle asked Mr. Chamberlain, on December 1st, whether his suggestion that metropolitan borough councils should carry out a systematic inspection of offices had been adopted; and, if so, whether any resistance to such inspection had been offered on which a test case could be prepared on the powers of local authorities over office sanitation. Mr. Chamberlain said he had not issued any communication to the metropolitan borough councils on the subject. He was informed that systematic inspection was made in a few of the boroughs, and he had not heard of any case of resistance.

Notification of Tuberculosis.—In a reply to Dr. Vernon Davies, Sir Kingsley Wood said the Minister of Health was not yet satisfied that the early notification of tuberculosis had been secured in all parts of the country. The Ministry had issued circulars to medical practitioners and to local authorities on the subject, which would be again considered on receipt of the notification returns for the present year.

Rinderpest and Foot-and-Mouth Disease.—On November 30th Dr. Vernon Davies called the attention of the Minister of Agriculture to the fact that the United States of America had restricted the import of South American meat from sources infected with foot-and-mouth disease. Dr. Davies asked whether the Minister of Agriculture would discuss the matter with the Minister of Health to ensure that the health of the people of this country was safeguarded. Mr. Guinness replied that the United States Department of Agriculture Order of September 17th, 1926, to which Dr. Davies referred, prohibited the import of fresh or frozen meat from countries where rinderpest or foot-and-mouth disease existed. It appeared to be designed to protect animals, as human beings did not suffer from rinderpest. Practically all meat imported into Great Britain from South America was inspected in the country of origin, and was subject to further inspection on arrival. Dr. Davies asked whether the Ministry of Agriculture thought there was no danger to human beings in admitting to this country meat which might be contaminated with foot-and-mouth disease. Mr. Guinness said that as the practice was to cook meat before eating it he did not think there was much danger. Recorded human cases of foot-and-mouth disease had been traced to milk or to contact with diseased animals. He thought there was no evidence against cooked meat. The Government was negotiating with the South American Governments to induce them to undertake special regulations for preventing the introduction of disease into this country.

Tuberculosis Officers and Private Fees.—Sir K. Wood, on December 6th, said that the public health committee of the Devon county council had passed a resolution which in effect stated that they wished to make it clear that the services of tuberculosis officers were absolutely free to all classes of the community, and that in no case could remuneration be made to them in any form. A copy of the resolution had been sent to the officers concerned, but no other steps had been taken to make it public. The Minister was informed that the resolution was passed because it was reported to the committee that one or more of the tuberculosis officers of the county council had received fees or presents from individuals visited by them in their capacity of tuberculosis officers.

Notes in Brief.

On December 5th Earl Winterton, replying to a question, said that all cocaine used in India was imported. Its importation was subject to the closest control, but the illicit traffic could not be successfully stopped except with the co-operation of manufacturing countries.

The Geneva Opium Convention of 1925 has been ratified by France and Poland, and for all parts of the British Empire excepting Canada and the Irish Free State.

The Ministry of Health does not feel justified in contemplating the treatment of rheumatism by a general scheme on the lines of that adopted for tuberculosis.

The Minister of Health offers to arrange for any Member of Parliament who wishes to do so to visit the Government lymph establishment.

A report on the provision made in Lambeth Infirmary for isolation and observation purposes is being prepared by a medical officer of the Ministry of Health.

Asked about the statement alleged to have been made at an inquest in Sheffield by a medical practitioner, to the effect that the best thing he could do was to let a man die, as if he had lived his life would only have been a misery, Sir Thomas Inskip, the Solicitor-General, said the inquest had been adjourned for a *post-mortem* examination, and it was impossible for him to answer questions on the case.

Mr. Ormsby Gore states that there is little prospect of an effective reduction in the amount of opium smoked in Malaya so long as unlimited supplies are available in China and continue to be smuggled into the Colony.

The Home Office knows of no case of poisoning due to the use of petrol containing tetra-ethyl of lead.

Mr. Chamberlain sees no reason for instituting an inquiry into the administration of mental hospitals.

The Minister of Health has ordered the publication of reports of the inquiries into the conditions of the production and manufacture of condensed milk in Holland and Denmark, so far as they affect public health.

Medical News.

IN commemoration of his jubilee as a general practitioner Dr. James Murray of Inverness has been entertained at a complimentary dinner by his colleagues from various parts of Ross-shire and Inverness-shire, who presented him with a silver salver. The chairman, Dr. J. W. Mackenzie (Inverness) said that to Dr. Murray belonged the credit of being the first to introduce antiseptic surgical treatment in the Northern Infirmary, for which he was well qualified by his training under Lister. Dr. Murray, in acknowledging, referred to the fact that he graduated at a time when the immortal discoveries of Pasteur and Lister completely revolutionized the practice of medicine and surgery. It was his good fortune to be closely associated with Lister as a prizeman and as a student.

THE Master and Wardens of the Society of Apothecaries have issued invitations to a dinner at Apothecaries' Hall, Blackfriars, on Tuesday, January 3rd, to meet the Lord Mayor and Sheriffs.

THE Australian and New Zealand Medical Association in England will hold its winter dinner on December 16th, at 8 p.m., at the Trocadero Restaurant, Piccadilly. The High Commissioners of Australia and New Zealand will be the official guests. All medical visitors are invited. Further particulars can be obtained from the honorary secretaries, Drs. E. T. C. Milligan or H. Bedford Russell (86, Harley Street).

MR. ERNEST CLARKE will give the last of the present series of lectures arranged by the Fellowship of Medicine, at the Medical Society of London, 11, Chandos Street, on December 12th, at 5 p.m. His lecture, which is entitled "Practical hints in the correction of errors of accommodation and refraction of the eye," is free to medical practitioners. The special courses arranged by the Fellowship of Medicine for January are: medicine, surgery, and the specialties at the Prince of Wales's General Hospital; cardiology at the National Hospital for Diseases of the Heart (limited to 20, so early application is desirable); diseases of children at the Children's Clinic; and psychological medicine at the Bethlem Royal Hospital. Syllabuses, tickets, and specimen copies of the *Post-Graduate Medical Journal* may be obtained from the Secretary of the Fellowship, 1, Wimpole Street, London, W.1.

A SERIES of lectures and practical courses of instruction for a diploma in psychological medicine will commence at the Maudsley Hospital, Denmark Hill, S.E.5, on January 4th, 1928. Part I of the course will consist of twelve lectures by Dr. F. Golla on the physiology of the nervous system, with demonstrations in physiological psychology; six lectures and demonstrations on the biochemical aspects of mental disorders and laboratory methods, by Mr. S. A. Mann, B.Sc., F.I.C.; eight lectures by Professor G. Elliott Smith, F.R.S., on the anatomy of the nervous system; practical instruction and demonstrations by Mr. Charles Geary; and eight lectures on psychology by Dr. Henry Devine. Part II, commencing in March, will include lectures and demonstrations on psychoneuroses, morbid psychology, the pathology of mental diseases, pathological anatomy, the legal relationship of insanity and treatment, mental deficiency, crime and insanity, therapeutics, clinical psychiatry, neurology, and the abnormalities of the fundus oculi. The fee for the whole course

is £15 15s., and for Part I and II separately £10 10s. each. Inquiries should be addressed to the Director of the Central Pathological Laboratory, Maudsley Hospital, Denmark Hill, S.E.8.

A THREE months' course of lectures and demonstrations on clinical practice and hospital administration for the diploma in public health will be given at the North-Eastern Hospital, St. Ann's Road, Tottenham, by Dr. F. H. Thomson, medical superintendent, on Mondays and Wednesdays, at 4.45 p.m., and alternate Saturdays, at 11 a.m., commencing on January 4th, 1928.

INTERNATIONAL medical courses will be held in Berlin during March and April, the subjects including new aspects and methods of clinical pathology and therapeutics, recent discoveries in connexion with metabolic disorders, obstetrics and gynaecology, and radiology. In addition to this there will be several series of lectures and demonstrations in different medical subjects throughout the winter. The courses are held in German, but some of the professors lecture also in English, French, and Spanish. Further information may be obtained from the secretary, International Medical Continuation Courses, Kaiserin Friedrich-Haus, Luisenplatz 2–4, Berlin, N.W.6.

THE out-patient department of the Princess Louise Kensington Hospital for Children was opened on December 6th. It contains accommodation for orthopaedic, ophthalmic, and oto-rhino-laryngological diagnosis and treatment, and there are also electrical and massage rooms. It is hoped that thirty-six beds will be available for in-patients early in 1928; some of these will be reserved for school children requiring tonsil operations. A good operating theatre, with all the modern surgical appliances, is to be provided. The hospital represents the re-establishment of a small institution in Church Street, Kensington, which was founded in 1840; it is situated in a very congested area in North Kensington. The funds for its establishment have been collected during the last three years by a committee under the presidency of Princess Louise, and the King and Queen have promised to open the hospital formally next May if the cost of £12,000 for the out-patient department and the two first ward blocks has been met by that date. A list of the honorary medical staff appears in the SUPPLEMENT under the heading "Appointments."

A NEW women's hospital, which has been erected by the Wirral Board of Guardians at a cost of £30,000, was opened at Clatterbridge on November 24th; it provides accommodation for 112 beds. The lower floor is occupied by the surgical section and the upper is devoted to medical cases, with special wards for fevers. Provision has been made for private patients.

THE council of Epsom College is about to award a St. Anne's Home Scholarship of £52 a year to the orphan daughter of a medical man who was in independent practice in England or Wales for not less than five years. Candidates must be not less than 7 and not over 12 years of age on May 1st next. Forms of application can be obtained from the secretary at the office of the College, 49, Bedford Square, W.C.1.

MR. P. C. RAIMENT, M.A.Oxon., M.R.C.S., L.R.C.P., has been appointed to the vacant chair of physiology in the State University of Egypt, at Cairo. Mr. Raiment, who took first-class honours in the Natural Science School at Oxford, has been for the last six years university demonstrator in biochemistry at Oxford. He leaves England at the end of this year.

THE Scottish Board of Health have appointed Dr. James L. M. Symns to be a District Medical Officer (Medical Referee) in their department.

THE annual report for the year 1926–27 of Livingstone College, Leyton, shows that nearly 1,000 missionaries have received instruction there since its foundation in 1900. During the year under review 100 students attended, representing twenty-eight missionary societies and seven countries. The instruction given included a full session from October to June, comprising elementary physiology, anatomy, practical medicine, surgery, tropical medicine, and hygiene, a vacation course in July, and three short intensive courses in March, September, and December on the care of health in the tropics. We referred to the Commemoration Day celebrations on June 18th (p. 1133).

THE health conditions at Port-of-Spain, the capital of Trinidad, are summarized for June last by Dr. George H. Masson, medical officer, in his report to the City Council. Of 114 deaths which occurred nearly one-half were in public institutions. Tuberculosis, bronchitis, and enteritis were each responsible for 8 deaths, and deaths were recorded also from pneumonia, malaria, dysentery, and syphilis. Four cases of typhoid fever were notified, and 990 cesspits were oiled and disinfected as a preventive measure. Three railway cars were disinfected for leprosy. The rats destroyed numbered 555; all were free from plague. Of 2,717 premises inspected for mosquitos most were satisfactory, but in 194 larvae were found. The sanitary administration of Port-of-Spain presents a varied interest.

PROFESSOR CALMETTE, sub-director of the Institut Pasteur, has been elected a member of the Académie des Sciences.

PROFESSOR GOSSET of Paris has been elected president, and Professor Tixier of Lyons vice-president, of the French Congress of Surgery to be held in 1928, when the following subjects will be discussed: (1) spinal anaesthesia, introduced by MM. Forgue of Montpellier and Basset of Paris; (2) remote results of the surgical treatment of duodenal ulcer, introduced by MM. Delore of Lyons and Okinczyc of Paris; (3) remote results of trephining for traumatic lesions, introduced by MM. Maisonnet and Petit Dulaille of Paris.

THE *Gazette des Hôpitaux*, otherwise known as *La Lancette Française*, has recently celebrated its centenary.

THE first International Oto-Rhino-Laryngological Congress will be held in Copenhagen, under the presidency of Professor E. Schmiegelow, from July 29th to August 1st, 1928, the official languages being English, French, and German. The subjects to be dealt with include: the conservative radical operation in chronic middle-ear suppuration; sepsis of pharyngeal origin; surgical diathermy in malignant growths of the upper air passages; and the anatomical structure of the middle ear and its influence on suppurations. Further information may be obtained from the general secretary, Dr. N. Rh. Biegvad, 3, Nytorv, Copenhagen K.

IN 1926 there were 383 women medical practitioners in Vienna as compared with 326 in 1925, which represents an increase of 20 per cent. as compared with an increase of only 2 per cent. in the number of medical men. The total number of medical practitioners in Vienna is 3,688, so that the proportion of women among them is 10 per cent. Last winter session the number of women medical students had risen to 351, or 15 per cent. of the total.

Letters, Notes, and Answers.

All communications in regard to editorial business should be addressed to ***The EDITOR, British Medical Journal, British Medical Association House, Tavistock Square, W.C.1.***

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the BRITISH MEDICAL JOURNAL alone unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the BRITISH MEDICAL JOURNAL must communicate with the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1, on receipt of proofs.

All communications with reference to ADVERTISEMENTS, as well as orders for copies of the JOURNAL, should be addressed to the Financial Secretary and Business Manager.

The ***TELEPHONE NUMBERS*** of the British Medical Association and the BRITISH MEDICAL JOURNAL are *MUSEUM 9861, 9862, 9863,* and *9864* (internal exchange, four lines).

The ***TELEGRAPHIC ADDRESSES*** are:

EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology Westcent, London.*

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MEDICAL SECRETARY, *Mediocera Westcent, London.*

The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*; telephone: 4737 Dublin), and of the Scottish Office, 6, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh*; telephone: 24361 Edinburgh).

QUERIES AND ANSWERS.

"T. W. P." inquires whether tea without the alkaloid is on sale as coffee without caffeine.

URINE STAINS.

"R. H. W." writes in answer to a question about removal of urine stains from clothes (September 24th, p. 573): I can recommend prolonged soaking of the cloth in cold water. The water should be changed from time to time, and if the stain is old three or four days' soaking may be necessary, but your correspondent will find that the stain can be very much reduced, if not entirely removed.

WORDS.

DR. ALEX. E. ROCHE (London) writes: Dr. Heywood Smith (BRITISH MEDICAL JOURNAL, December 3rd, p. 1062) says that laparotomy should be laparatomy, as it comes from λαπάρα (not λαπάρον). On his quite unjustifiable reasoning the alternative, coeliotomy, which he prefers, should be coeliatomy, since it

source is κοιλία, a word variably meaning belly, stomach, or intestines, and therefore probably less suitable for surgical terminology than λαπάρα, which denotes the superficial soft parts between ribs and hips—a favourite target of the Homeric heroes, whose guts prolapsed through wounds of it. In any case, laparotomy is sanctioned by usage.

SINUSITIS.

DR. A. B. KEITH WATKINS (Newcastle, N.S.W.) writes with reference to a letter by Dr. Sydney Pern of Melbourne (JOURNAL, September 17th, p. 518) to say that he has given colloidal manganese an extensive trial, using different preparations in various doses, with the disappointing result that no cases of definite antral, frontal, or sphenoidal sinusitis were cured or more than temporarily improved, except in children, where a few examples of low-grade antral infection with a discharge, chiefly mucoid, completely cleared up. Dr. Keith Watkins asks for information on the following points: "(1) Which particular preparation of collosol manganese does Dr. Pern use? (2) How he determines the dose, frequency, etc., in each case? (3) What accessory treatment he gives? (4) How long he keeps his cases under observation before a cure is pronounced?" Dr. Keith Watkins adds that he has found the greatest help, apart from operation, from the use of autogenous vaccine.

A PERSONAL EXPERIENCE OF SPINAL ANAESTHESIA.

"H. B. P." writes: After reading (November 12th, p. 878) the report of the discussion at the meeting of the Section of Anaesthetics of the Royal Society of Medicine it occurred to me that my experiences, as a medical man, after an operation in the course of which spinal anaesthesia was procured, may not be without interest. Early in February, 1926, when 66½ years of age, I underwent complete removal of the rectum for carcinoma. A general anaesthetic was given, and towards the close of the operation the theca was injected. Immediately following the operation I had complete retention of urine lasting for three weeks, at the end of which period this gave place to incontinence. After ten months I had complete control of the bladder by day, but the nocturnal incontinence still persists (twenty-one months). In the first week in May, 1926, I had a suprapubic cystostomy performed to relieve renal back pressure, and for two months wore a Hamilton Irving suprapubic apparatus. Cystoscopy in August, 1926, showed the bladder to be perfectly healthy and the prostate normal in size. At present I have a urinary infection due to *B. pyocyaneus*. On recovering from the general anaesthetic I had no feeling in my legs, neither could I move them for some hours. Six days later I had severe pain in both legs which disappeared after a few days, when my legs and thighs commenced to atrophy. In May, 1926, shortly after the cystostomy, I found it difficult to extend my legs, which were flexed on the thigh at an angle of about 45 degrees. The question of forcible extension was then discussed but postponed, as I was regarded as too weak for an anaesthetic. From this date on my legs gradually improved, until in June, 1926, I was able to stand and walk a little with assistance. In the spring of 1927 I walked slowly as much as six miles on end, but since then I have slowly become more and more helpless, until now I am completely confined to bed. At intervals since the operation I have had an irregular temperature. From a neurological standpoint the present condition of the limbs is: "*Motion*. All movements of lower limbs present. Extreme weakness. *Sensation* to pinprick, vibrations, sense of position and movement all normal, blunted to heat and cold. No muscle or tendon tenderness. *Reflexes:* Knee-jerks absent; slight contraction palpable in quadriceps on essaying the test. Ankle-jerks very slight. Plantars are flexor, and cremasteric reflexes absent. *Trophic:* No bedsores. Muscular tone very poor, muscles extremely flabby. Thighs and legs wasted. The patient states that the right leg has always been the weaker, but no difference was found on examination."

PREVENTION OF EYE INJURIES.

DR. J. B. PIKE (Loughborough) writes: I have repeatedly striven at the Board of Trade and in the press to direct attention to the prophylaxis of injury to the eye by foreign bodies. The remedy, though obvious, is frequently overlooked. What seems to be required is that all engineering firms shall supply triplex glass protectors for the eyes, and that in case of accident due to the want of this simple precaution no compensation shall be awarded.

INCOME TAX.

"B.H." deducted subscriptions to some professional societies which issue journals dealing with his particular subject, but the inspector of taxes has refused to allow the deductions, relying on Mr. Justice Rowlatt's dicta in Simpson *v.* Tate. Subscriptions to societies, such as the British Medical Association, have, of course, been allowed.

*** The case quoted dealt with an assessment under Schedule E, the governing section being Rule 9, which allows the deduction of money expended "wholly, exclusively, and necessarily in the performance of the duties of the office or employment." "B. H." is assessed under Schedule D, and the relevant section, Rule 3 of Cases I and II, is somewhat differently worded—"no sum shall be deducted in respect of any . . . expenses not being money wholly and exclusively . . . expended for the purposes of the . . . profession." It will be seen that under Schedule D the incurring of the expenses is not required to be "necessary." We suggest that our correspondent might remind the inspector that Mr. Justice Rowlatt was dealing with the stringent Schedule E rule and not with expenses allowable for Schedule D purposes; but we must admit that little, if any, emphasis was laid on the "necessary" stipulation, and the principle of Mr. Justice Rowlatt's decision seems to have considerable application to Schedule D. At the same time it may well be that it is less rigorously applied in practice to Schedule D.

Cash Basis.

"J. J." explains that he is being pressed to supply particulars of his "earnings" as distinct from the excess of his cash receipts over payments made for professional expenses. The partnership deed requires the books to be kept on a cash basis.

*** We have always understood the attitude of the Revenue authorities to be that while they regard the earnings basis to be technically correct—as we must admit it is—they are prepared to accept the cash basis as being equitable in the long run, and we consider that "J. J." would be justified in pressing his point by requesting the hearing of his appeal by the district or the special commissioners. Two points should not be overlooked: one, that the cash basis is indefensible if the income of a particular year, as a single unit, is the important factor, as in the case of a new practice; the other, that on the basis of "earnings" a deduction should be made for specific debts believed to be wholly or partially irrecoverable.

LETTERS, NOTES, ETC.

MALFORMATIONS OF THE STERNUM.

DR. D. OWEN WILLIAMS (Glandyfi, Cardiganshire) writes: The memorandum about a cleft sternum (JOURNAL, October 15th, p. 687) reminds me of two malformations of the sternum which I have seen during recent years. In one case the ensiform cartilage is considerably enlarged and thickened and feels hard, as if ossified, but of this I am doubtful; a doctor who saw it along with me some time ago thought that this was so, and that it was an exceptionally rare condition. In the other case the lower two-thirds of the sternum are depressed, being indented for at least 1 in. in depth, almost displacing the anterior mediastinum, and it is probably due to a rickety condition, although this is the only sign present in the chest.

CROSSED LEGS AND DEFORMITY.

DR. R. TURNER (London, W.C.) writes: Having attended a very large number of newborn infants I have observed that the habit of crossing the legs in the lower third is very common among them, and that the *habit tends to persist*. As a result the legs become bowed, and this condition is, I think, often mistakenly thought to be due to rickets as the child gets older. If the habit is counteracted at an early stage by the simple device of putting a small soft cushion between the infant's legs and feet the legs straighten early and easily.

TREATMENT OF TONSILLITIS.

DR. SYDNEY PERN (Melbourne, Victoria) writes: Having for the last ten years been impressed by the enormous amount of sickness produced by infection in tonsils which in the past have been, and still are, looked upon as normal, I tried to find some method of cleaning up these infections, as, failing this, it meant that 75 per cent. of the people would have to lose their tonsils. Being somewhat impressed by the work done by Drs. Murphy, Witherbee, Craig, Hussey, and Stern at the Rockefeller Institute for Medical Research in 1919, I gave their treatment by doses of *x* rays a trial, with varying results; to this I added exposures to ultra-violet light to the tonsils and the high frequency current, the former to bring about local reaction, the latter to help to sterilize the surface of them. Vaccines cultured from stabbing the tonsils with a fine capillary tube helped, but of late I find that, splitting down obvious crypts, keeping them open, and employing a solution containing iodine gr. 120, zinc iodine gr. 160, glycerin to 2 ounces to swab them out with, they very soon cleaned up and remained healthy. As there are no nerves in the tonsils, these crypts can be split without even cocainizing them, care being taken not to cut the anterior pillars of the fauces. *X*-ray treatment is done once a fortnight on each side, the rays being directed behind the angles of the jaws. The high frequency and ultra-violet light treatment is employed thrice a week for the first few weeks, then twice a week for eight or ten weeks. This is usually sufficient to complete the cure. Having done many hundreds now, I am satisfied there are very few tonsils which cannot be freed from infection by these methods. The full details are published in the *Medical Journal and Record* of New York, August 17th, 1927.

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 39, 40, 41, 44, and 45 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 42 and 43.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 231.